ATCO NEWSLETTER

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

ATCO HAM IN THE SPOTLIGHT

This time we visit with Dick Knowles, N8IJ. Dick has been around Ham Radio for quite some time but is a newcomer to ATV. Since he has started with ATV, I have seen Dick progress from no ATV equipment 6 months ago to full operation on 70 cm. At this time, he is hampered by the lack of a tower for the antennas but is very successful with send and receive on 70 cm and reception on 23 cm.

Since we added digital ATV to the repeater, he has taken the lead to help negotiate a quantity discount for the purchase of digital receivers for our members from an Ebay seller. He also identified a good buy for 70 cm amplifiers from Fair Radio. A number of ATVers are going to become high power stations as a result. Thanks for your help, Dick.

I know we’ve got him hooked big time because he offered to help with Net Control on Tuesday nights.

THAT’S DEDICATION!

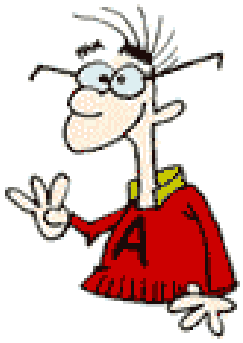
Thanks for your ATCO support, Dick.

ACTIVITIES ... from my "workbench"

Hello again. It's again time for a review of the things we've been working on for the last 3 months. **This** time I decided to work on the Newsletter while on vacation so I find it much easier sitting here poolside in sunny Florida sipping a drink in the 70-degree weather. I just checked the weather in Columbus and find that you are enjoying single digit temperatures with about 2 inches of snow. The weather forecaster here in Naples, Florida says we're in for a cold snap tomorrow with overnight temperatures dipping into the upper 40's before returning to the 70's by noon. Sitting poolside, I am finding it difficult to think about ATV but I'll try. Here goes.

One item high on the repair list is to attempt fixing the poor Channel 4 radar signal. I've checked the receiver and that's ok. The source at Channel 4 is outputting about 10 watts so that's ok too. (I know there is path interference between Channel 4 and downtown but it seems to me that 10 watts should nevertheless travel 5 miles and still yield a P5 picture so I pushed on). Next, I replaced the DB Products antenna that had been in place since about 1995 with a new Comet 12 Dbd antenna with still no improvement. The last thing not checked is the interdigital filter on the receiver input so I removed it for a "tune-up". To my disappointment, the filter was improved upon slightly but not enough to make a difference. So now I'm convinced that the actual path has gotten much worse since a building was built between Channel 4 and downtown and we have no other options at the present time. I wanted to try a horizontally polarized antenna system but now Channel 4's OSHA regulations prevent anyone but a licensed climber to change the antenna on their tower so we'll have to wait till they do tower maintenance to try that so I'll move on to something we CAN fix.

Now comes the big news. After receiving a digital TV board set from a German group, we spent the last year trying to get some documentation for it in ENGLISH so it is still not operational. While waiting, we found a system the Dutch have that proved promising. We bought their board set and viola! The system is very well documented so W8RUT got it up and running right away. He brought it over to my place for packaging and on the air testing which was done in the first week of this January. The output is only 1.8 milliwatts so without an amplifier, we felt nobody would see it if it was installed downtown. A high linearity amplifier is required and W8RUT DOES have one on order but it is not here yet with no notice as to when it will arrive so we needed to improvise. Ken found an old Downeast Microwave "linear" brick amplifier that outputs about 1 watt with 1.8 mw of drive so we decided to try it. When installed, the output was indeed slightly greater than one watt so an actual test was accomplished. Signals could now be seen from my house to Ken's about 6 miles away with perfect pictures. With that success in hand, we decided to install the system downtown at the repeater. Luckily the weather cooperated so we were able to install the 1260 MHz antenna needed also. As soon as Ken and I turned it on, several people reported very good reception. That was very good news to our ears so we shook hands and left the facility with the signal running continuously. Apparently, the lack of a high linearity amplifier doesn't prevent seeing anything but as we watch it, errors do show up from time to time. It will be interesting to see how much of an improvement the new amp will provide. Much testing is still needed to be able to establish any further guidelines so stay tuned. **In any case, we are now the first ATV repeater in the country to transmit digital television.** The output is QPSK (DVB-S) modulation on 1260 MHz so get your digital satellite receiver operational and join in on the fun of digital ATV. As soon as we get the German boards operational, we will have a DVB-T (8VSB) signal on 434 MHz to experiment with so you can compare the two types of digital signals. Also, because of the digital ATV introduction above, I purposely included more digital information topics to follow in this Newsletter to help you become acquainted with this new ATV mode.



That' all I have for now. More on our Dayton link very shortly for we have some equipment operational now in test mode.

…WA8RMC

FCC SUSPENDS AMATEUR SERVICE LICENSE GRANTS

ARRL Bulletin 34 ARLB034
The FCC has stopped issuing Amateur Service license grants while it attempts to unravel an apparent computer programming glitch. The FCC posted a public alert on the Universal Licensing System (ULS) site on November 5. At this point, no one seems to know when the problem will be fixed.

"The granting of Amateur applications has been temporarily suspended," the FCC announcement says without further explanation. "We apologize for the inconvenience." The Commission has given no indication when processing might resume, but when it does, the FCC likely will pull back more than 125 Group D (2x3) amateur call signs it mistakenly issued out of sequence and grant the applicants new in-sequence call signs. Although they eventually may be set aside and replaced, all call signs showing up in the ULS database are legal to use on the air.

The difficulties began October 28, when the FCC implemented a ULS software change that caused applications to be processed improperly. ARRL Volunteer Examiner Coordinator Manager Bart Jahnke, W9JJ, says the FCC was forced to halt the processing of amateur applications after attempts to correct the initial error only seemed to make things worse. "The FCC is still trying to get its arms around the problems," he said this week.

The ARRL VEC has been working with personnel in the FCC's licensing branch to identify where the FCC had been in the call sign sequences, where it had jumped to and where it was supposed to be.

Jahnke says the problem appears to have affected only Group D call signs.
…From ARRL Headquarters Newington CT November 8, 2004

PIZZA, PIZZA, PIZZA… A nice shift from ATV activities.

January 7 brought us good friends and pizza. This night 17 of us assembled at Michael's Pizza in Westerville to enjoy pizza courtesy of ATCO.

This time I tried to deviate from the old standby of Donatos Pizza. Michael's has, what I believe to be, one of the best pizza offerings in the Columbus area. It is not centrally located but I feel the pizza quality made the extra trip worthwhile. In any case, we had a good time with the pizza and talking to old friends. We'll have to repeat the get together again soon.

The pictures at the right reflect only a few of the participants.

…WA8RMC

A NEW WAY TO PLAY CHESS

OK, the following does not directly relate to ATV. However, I believe we've found a new way to make use of all those old RF adapters and fittings lying around in your junk drawers. You know the old saying, "One can't have enough RF adapters around the Hamshack". I saw this in a recent issue of an RF magazine and couldn't resist the desire to share it with you.

If any of you create something similar to this, let me know and send me a picture. I'd like to share it with the rest of us.

…WA8RMC

FCC RELOCATION INCLUDES SOME AMATEUR 2.3 GHz SPECTRUM

The FCC has acted to include the first five 5 megahertz of the 2390-2417 MHz Amateur Radio Service primary allocation among spectrum it's opened up to accommodate federal users shifted from other bands. The spectrum relocations, which also involved non-amateur spectrum at 2 GHz, are aimed at making room for advanced wireless services (AWS), including so-called "third-generation" (3G) wireless systems.

After voting unanimously October 14 to adopt a Seventh Report and Order (R&O) in ET Docket 00-258 and WT Docket 02-8, the FCC called the action "an important step towards the future auction of 90 MHz of spectrum for AWS." The Commission said it worked with the US Department of Defense and the National Telecommunications and Information Administration to reallocate spectrum to allow for relocation of critical military and other operations into the 2360 to 2395 MHz band.

The FCC says its action will make room available to shift federal government aeronautical mobile flight test telemetry (AMT) operations from the 1.7 GHz band to the 2.3 GHz band by extending the primary allocation for AMT to include an additional 10 megahertz from 2385 to 2395 MHz. "Making the additional spectrum available for non-federal AMT will accommodate the higher data rates needed for non-federal flight testing," the FCC said.

The Commission similarly extended the existing secondary spectrum allocations for federal and non-federal non-aeronautical mobile telemetry operations in the 2360-2385 MHz band to include the 2385 to 2395 MHz band. In addition, it extended the existing federal primary radiolocation and secondary fixed allocations from 2360 to 2385 MHz to include 2385 to 2390 MHz.

Last December, the ARRL announced that it had agreed in principle with the Aerospace and Flight Test Radio Coordinating Council (AFTRCC) to develop coordination procedures. The League told the FCC it could support Amateur Radio sharing of 2390 to 2395 MHz on a co-primary basis with flight test telemetry operations. But it has insisted that 2395 to 2400 MHz remain an exclusive amateur primary allocation.
…The ARRL Letter Vol. 23, No. 43 October 29, 2004

DTV TRANSITION PICKS UP SPEED

Few people expect the DTV transition to be completed and analog shut off by the original December 2006 deadline, but there seems to be a consensus that it will be completed within the next five years. While many broadcasters feel the transition is moving too fast, considering the small number of DTV tuners in viewers' homes, companies that won use of the out-of-core frequencies in auctions (see "Small Screen TV" for one planned use of these channels) and public safety agencies desperate for more spectrum complain it is not moving fast enough. Indeed, stations on channels 63, 64, 68 and 69, which have been allocated for public safety use, and on adjacent channels that could interfere with systems on these frequencies, could be forced off these channels as soon as Jan. 1, 2008. The FCC is expected to consider setting a new date for the end of analog broadcasting early in 2005. While it doesn't appear the requirement that 85 percent of households have the ability to receive DTV broadcasts before analog is shut down will be changed, there will be considerable debate over how cable and satellite coverage of DTV broadcasts should be counted towards it.

The FCC has started the process to finalize the stations' DTV channels after analog broadcasting ceases and channels 52-69 are released for other uses. Based on some preliminary studies I've done, I believe this process will be more complicated than many stations expect, especially for stations with out of core DTV channels. The reason is that DTV can co-exist very nicely with co-channel and adjacent channel analog stations. However, due to the broadband, noise-like nature of DTV signals, much higher desired to undesired (D/U) ratios are required between co-channel and adjacent channel DTV stations. Stations expecting to return their analog channel in densely populated areas are likely to find that they cannot replicate their current DTV coverage area on their analog channel without causing interference above the 0.1 percent threshold allowed by the FCC during the channel election process. See my RF Technology columns in TV Technology for examples of channel congestion in the northeast. If all goes as planned, the final DTV Table should be completed in early 2006.

ATSC DTV tuners are dropping in price and improving in quality. DTV set-top boxes, with SD and HD outputs, are now available for under $200 at Wal-Mart. As the FCC DTV tuner mandate starts to affect popular screen size TV sets, we should see more DTV tuners in homes. Zenith's "fifth generation" ATSC tuner has received rave reviews, even from former 8-VSB cynics. Other manufacturers are announcing improved 8-VSB chip sets and I expect we'll see comparable performance from other manufacturers in 2005. I'd also like to see some competition in the market for portable, USB 2.0-based DTV tuners. The only one I've seen to date is the SASEM OnAir USB HDTV. The device places some severe hardware demands on the computer it's attached to. There have been rumors ATI will market a USB 2.0 HDTV tuner/decoder based on its Nxtwave 8VSB chips, but their Web site only shows a PCI based HDTV Wonder card.

Transmitter manufacturers saw a surge in orders as many broadcasters rush to meet the July 2005 deadline for building out DTV facilities to either maximum power, if they are staying on their DTV channel, or to 100 percent replication of their 1998 analog coverage if they are not. The FCC requirement that all DTV stations transmit full PSIP data in compliance with ATSC Standard A65b and provide EIA-708 closed captioning on their DTV signal is driving orders for electronic program guide and closed captioning equipment.

This combination of better and less expensive consumer ATSC receivers and higher power stations operating in compliance with ATSC standards should improve DTV viewer interest and satisfaction. Several countries announced plans this year to start terrestrial DTV broadcasting while countries that have already begun DTV broadcasting planned for the shutdown of analog TV. At least in one country, the transition to all digital terrestrial TV looks like it may take longer than expected. OFCOM, the telecommunications regulator in the United Kingdom, is now looking at a 2012 date for completing the transition, two years after the previous 2010 target. The United Kingdom is looking at a phased transition, starting in 2007, which will gradually switch off analog broadcasts. So far, the idea of a staged analog shutdown has received little attention in the U.S. It could, however, perhaps provide a way for the FCC to clear the most valuable spectrum in heavily populated areas while giving stations in more rural areas more time to make the switch.
…from Doug Lung’s TV technology RF report 12/8/04

ATCO FALL EVENT…a great time by all.

The end of October was the end to our Fall Event in the same ABB facilities held every year since 1995. It's been great and we've had great times but now it is time to move on. Move on to new facilities that is! This coming spring we will have the privilege to be able to use the new ABB facilities in their new building located in Westerville for our next Spring Event. Join us then. Details will appear in the next ATCO Newsletter.

We had a discussion until all had arrived then settled down to a lunch provided by ATCO. Afterwards we had a meeting about the following topics.
We swapped antennas at the repeater site.
Digital ATV board instructions for the German boards are not available yet.
We voted to pay gas for KC8LZC's trailer at Dayton.
We re-elected the present officers for another term.
Discussed the Suntracker balloon launch.

After the meeting, we had a door prize drawing where, as usual, no one went home without a prize. We'll see you again at the Spring Event at a new location.
…WA8RMC

ATN WINTER NEWSLETTER 2005

The following are ATN Newsletter happenings from participating chapters. The Amateur Television Network started with the groups in California and spread to communities East. We could form a chapter here if everyone thinks it to be worthwhile so we'll have to discuss it at the Spring Event. The following excerpts give us a sample of what's happening with the other groups. Ed

NEW ATN CHAPTERS:
ATN-C-AT (Central Atlantic, C.A.A.T.N. merge with ATN)
ATN-IL W9ATN affiliated with the Rockford ARC
ATN-GA affiliated with the Big Shanty Repeater Club

ATVQ: Gene WB9MMM with the help of the contributing editors has done a great job improving the magazine with more technical articles and ATV news worldwide. ATVQ is a must read item for every ATVer! Check it out at www.hampubs.com

ATN PLANNED DAYTON 2005 ACTIVITIES:
The national meeting will be on Friday evening with the exact details to be posted on the website in the near future. The ATNA/ATN dinner location in the past has been the Stockade Inn, 1065 Springfield St. near Downtown Dayton but we ran out of room last year and in process of finding a larger dining room to hold us all in comfort.

Ron Cohen, K3ZKO has a booth for the club and so far two volunteers from his chapter. He has requested a list of volunteers from all ATN chapters to help man the booth and get the necessary passes to get in early before the Hara Arena is open to the public. Let's make this a share experience and promote the ATV mode and ATN. Please email Ron at rcohen@voicenet.com ASAP thank you!

ATN-AZ NEWS:
Ron KG6SAB, a resident in both the AZ and CA chapters has been appointed by the trustees to reorganize the Arizona Chapter, Ron brings great experience in organizing and promoting clubs. More details at the winter meeting.

WHITE TANK MT:
A new controller is under construction to add more inputs to the repeater to allow linking to Mt. Lemmon and a link towards California. A new low loss feedline has been installed last month, Ron KG6SAB, Ward WB7VVD, Greg N7VUB, and Mike WA6SVT braved the bad weather to install 220 ft of 1 5/8" Heliax to reduce the feedline loss.

MT. LEMMON:
The Mt. Lemmon repeater is under construction to replace the old repeater lost in the fire last year. Harold K7AED, Greg N7VUB, Ward WB7VVD, and Mike WA6SVT installed the antennas and one feed line before dark this fall and plan to return to finish the feed line install. Greg and Harold are finishing up the repeater so it can be transported up to the site.

ATN-CA NEWS:
ATN SUMMER BBQ MEETING:
This year the meeting was at WA6SVT's QTH in Crestline. This was a BBQ social event. One business item that was discussed and approved was an addition of two vice presidents to help us get organized better as a chapter. Don KE6BXT and Allan W6IST bring with them great experience in running organizations. The two vice presidents are appointed till the 2005 Winter Meeting elections for President and Vice president will be made by the membership. The person with the highest vote will be president and first runner up will be vice president. Any member in good standing can run for office.

We all had a good time, Mike gave away lots of goodies (he got rid of lots of junk) and this was the last time most of us had a chance to socialize with Stuart W1LEG. He passed away shortly after the meeting due to organ failure; he was only 45 years young. Stuart was the British Ham who came to the states several years ago with his great humor. He will be missed.

Tom O'Hara of P.C. Electronics made a great deal on 1.2 GHz downconverters for ATN members on a quantity basis shipped to one address and paid with one check. 20 Converters were bulk purchased by ATN members in the ATN-AZ and ATN-CA chapters. Contact Tom at tom@hamtv.com for deals for ATN members.

Thanks to Jim K6CCC for running the Monday night Mt. Wilson ATN net, Roland KC6JPG and Dave KA6DPS for running the Tuesday night linked system ATN Net.

SANTIAGO:
The ATV repeater has had two outages, one due to lightning striking the power lines and damaging several power transformers, the other outage was due to a truck striking a power pole. Daryl N6QPK made two maintenance trips this season, one to reset the controller after the lightning strike and the other to work on the 434 MHz receiver. Two trips were made to Santiago last fall to repaint the inside of the site building for the landlord. Norm KD6OMV, Daryl N6QPK, Gene K6BNN, and Mike WA6SVT were in the work party.

OAT MT:
Allan W6IST, Joe K6TBA, Norm KD6OMV and Mike WA6SVT finished the move into the new Oat Site. Bill WB6DYM and Abel N6ENL gave us a rack. We teamed up with one of the other ham groups at the site and Bill WB6DYM to finish the tower top site receive bay above the 100 ft tower.

The bay features an 8.5 dB wide band antenna at 113 ft. A custom three port 433-464 MHz combiner that was designed by Mike WA6SVT and Bill WB6DYM using three DCI 10 pole filters one for 433-444.5 MHz amateur band and the other two for the land mobile bands. Each filter is followed with a Chip Angle preamp and splitters to feed several receivers. The transmit antenna is at 90 ft (the highest TX antenna on the tower).

BLUERIDGE MT:
A 5 GHz FM link is in progress to replace the 1253 MHz link to provide better picture. The early winter weather has snowed in the access road and the project will resume after the snow melts in late spring.

MT. WILSON:
The repeater is back on after major construction at the site. The old 1960s vintage power supply and video DA was replaced to save space and improve reliability. A new controller with a link input is under construction so we can link Mt. Wilson into the system.

SANTA BARBARA:
Rod WB9KMO has added a new lower loss VSB filter to the repeater output with notches for 1253 and 1286 MHz to allow better 1.2 GHz reception to link receivers. Each spring ATN has the responsibility to cut weeds around the facility in exchange for using the site, Most of the time Rod gets stuck with this chore. If you can help this spring, please contact Rod at rod@sbatv.org

MT. PALOMAR (Palomar ARC)
Art KC6UQH built up a new 1253 MHz receiver for the Valley Center Link and worked on several areas of the repeater including fixing the intermittent crowbar problem with the power supply, now the repeater is more reliable.

ATN-C-AT NEWS:
Welcome to the ATN family! This new chapter brings with them ATV repeaters (most linked) from Delaware, Maryland, New Jersey, and Pennsylvania. December 5th was the winter meeting with the main topic, linking to the Baltimore ATV repeater. Discussion of aligning with ATN also was covered (editor's note, due to finding out that we have a new ATN Central Atlantic Chapter on the last evening of putting this newsletter together, more info about the meeting was not obtained).

ATN-GA NEWS:
SWEAT MT:
The repeater at Sweat Mt. now has a new coverage map on the website thanks to Matt KC7GSA. Ralph N4NEQ reports the repeater is running well and many of the locals meet for what is known as "lunch bunch" at a local BBQ. He sent Don KE6BXT our webmaster an updated info package for the website.

ATN-IL NEWS:
ROCKFORD:
Our chapter had its winter meeting on Saturday December 4th. The meeting was called to order at 9:27 AM. After the business part of the meeting and dues paid, a discussion of priority of items to enhance the Rockford Repeater, results are 1st purchase of a new 434 MHz receiver (2nd input), 2nd tower camera and 3rd preamps for the existing 1253 FM receiver and the 434 MHz receiver.

The repeater has 4 inputs on the controller: 1253 MHz FM, 434 MHz AM, and NASA Channel, Temperature (outside and equipment/final amplifier) in addition to the ID at the end.

We had new officer elections. President: John KA9SOG, Vice Pres: Dan KC9ATR, Sec/Tress: Gene WB9MMM

We had a storm take down the antenna and mount and after re-installing it and two trips to the site we found the feed line had a high VSWR. Currently we are using a temporary LMR-400 feed line.

We replaced the 421.25 MHz modulator, added the 434 MHz 2nd receiver and the repeater is working well except for some DTMF decoder problems with the higher tones. The repeater has been seen as far away as the N/W Chicago suburbs. We hope to see many of the other ATN chapter members at Dayton this year. Friday night is the National ATN/ATNA dinner. See ATVQ for more details. 73, Gene

ATN-IN NEWS:
CROWN POINT:
Henry AA9XW has added the ATN-IL new club call sign K9ATN to the repeater. On the way to Dayton last year Gene WB9MMM, Shari N9SH, and Mike WA6SVT ran mobile tests on the repeater.

Charlie K9BIF is a new member from Goshen Indiana; He was at Dayton last year talking to Mike WA6SVT and some of the other ATVers about an ATV repeater project he was working on. This month Charlie reports his 439.25 MHz in with both 427.25 and

1253.25 MHz outputs is running well at the home QTH and in process of locating it to a site near Goshen to provide better coverage. We hope he will include his repeater into the ATN family.

ATN-NV NEWS:
Mt. POTOSI:
The repeater has a new trustee, Frank N7ZEV. The repeater has been under upgrades by Frank, N7ZEV. Mike WA6SVT made a trip this summer to help too.

ATN-NM NEWS:
Ben's Bluff: Nothing new to report 73,s Earl N8TV and Darlene KD7HPN.

NEWSLETTER:
Now that ATN has more than doubled in size since the last newsletter and is now national. I would be grateful if each chapter would appoint or elect a contributing editor who can update their chapter's member list (I have the master list on Microsoft Access), report news about the repeaters local events and activities happening in your chapter.

At the present time ATN publishes a newsletter two times a year and it is sent to the email address of each member. It is requested that any email change be sent to your local ATN chapter secretary and a copy to wa6svt@aol.com . Each newsletter is posted on the website too.

Events between the newsletters publication dates are posted on the ATN website www.atn-tv.org. The event notice posting request can be sent to ke6bxt@qsl.net. Activities, events, and work parties are located on the calendar for each month. Meeting notices are usually listed on the main page banner too.
THANK YOU:

The ATN Trustees and management want to thank all of the members who donated items, designed and built items, helped at the sites. It is your efforts that greatly help make ATN the now national network that it is. ATN is the world's largest & successful ATV repeater club thanks to your help and support of the Membership.
K1ATV Hams should be seen as well as heard. Tucson AZ
…Reproduced with permission from WA6SVT.

AMATEUR DIGITAL TELEVISION…early information is provided here!

As you might have guessed, the ATCO newsletter this time focuses on amateur digital television. Now that we've unleashed a new mode of communication on the amateur television operators, we need to learn more about what it is, how it works and how it benefits us. I hope that with the help of the following articles, we can start doing just that. We all know very little about this new mode and even more challenging is understanding all of the confusing and sometimes contradictory terms. While we don't have all of the answers, let's start here with some different views on the subject.

*I wrote the article**, "THE ATCO ATV REPEATER GOES DIGITAL…. WE DID IT!"** for ATVQ magazine to introduce digital ATV. Unfortunately it was not in time to make the next ATVQ deadline but Gene said he'd run it in the spring issue. He DID say, however, he'd include a short notice by W8DMR and will use the article pictures for this issue's front cover!*

*The next article, **"ATCO DIGITAL AMATEUR TELEVISION… ON THE AIR!"** was written by W8RUT and gives his viewpoint on the subject. He describes the operation in a little more detail and gives us some insight as to what's yet to come.*

*Finally, I'd like to present the details originated by the designers of the system we now own entitled, **"WELCOME TO THE WORLD OF DIGITAL AMATEUR TELEVISION!"**. They describe the overall operation in, what I believe, the best description of any to date. I edited out some of the technical details for I feel it is rather intense for a first reading. However I want to make sure they receive the credit for their brilliant work and invite you to see the complete details at their web site at http://www.d-atv.com.*

Enjoy!
…WA8RMC

THE ATCO ATV REPEATER GOES DIGITAL…. WE DID IT!

The Amateur Television in Central Ohio Group has just installed the first digital ATV repeater output in the United States. (To the best of our knowledge, we are the first but I'm sure we will not be the last.) I firmly believe we started what will become a fast transition to digital amateur television in the United States in the very near future. Prices are falling and the complexity is getting simpler and I'm sure a number of US manufacturers will have digital offerings soon. Also, there has been a great hesitation by many to venture into this technology because it has not been very stable. That is, there is a great deal of formats available and the selection of the wrong one for ATV would most certainly render the chosen scheme obsolete. That would be quite costly for most amateurs to shoulder so, quite naturally, most have been waiting for someone else to do the pioneer work and spare them the research expense. We too have been quietly watching various schemes appear and be rejected for one reason or the other. Quite notably, the groups in Europe have been on the cutting edge of this frontier so we now learn at their expense. I don't know why, but it seems that the Germans and the Dutch ATVers are the most advanced and willing to experiment with various integrated circuit chip sets. Maybe they are willing to experiment more or perhaps they have more ATVers involved in digital TV professionally. I don't know for sure at this time but one thing is certain. We are very grateful of their efforts to keep the ball rolling for if it were not for them, the ATCO group would still be watching for cost effective developments. They have chosen DTV-S over the DVB-T and DVB-C formats as best for ATV use and I agree. We'll explain that more in the future.

To my knowledge, there are at least two groups experimenting with digital television in Europe. In Germany the German Amateur Radio Club associated with professor Uwe Kraus, DJ8DW, at Bergischen University of Wuppertal has designed and built 434 MHz 8-VSB transmitters and receivers with the help of his engineering students. We have had one of their units for a year now but lack sufficient documentation to properly configure it because it's all in German. They promise a translated version soon but have said that for a year now. In the meantime, a Dutch group in the Netherlands developed their own design with very good documentation so we zeroed in on their design for implementation here. Details can be seen on their web site at http://www.d-atv.com. We purchased that unit, packaged it, installed it at our repeater on Sunday, January 9, 2005 and began experimenting. The 434 MHz German 8-VSB installation will occur at a future date so we can also evaluate that mode.

Our complete digital transmitter consists of a MPEG-2 encoder board approximately 4" square, a DVB-S I/Q baseband board also 4" square and an RF modulator board about 2.5 x 4". The 1260 MHz QPSK modulated RF output from the modulator board is about 1.5 milliwatts, which drives a Downeast Microwave linear brick amplifier to the 1 watt level. (It has been said that very linear RF amplifiers are needed here to minimize the error rate so we have a high linearity amplifier on order but not here yet. In the meantime the Downeast Microwave brick amp seems to perform just fine even though it is not classified as a "true high linear amplifier". More experimentation is needed here to determine limits). The one watt output is finally fed to a Diamond 12 DBd gain omni antenna through 25 feet of ½ inch Heliax located 650 feet above street level. The result is reception by 5 people (2 of them mobile) and up to 22 miles away on the first day of operation! (They were anxiously waiting for Ken, W8RUT and I to complete the installation).

The following ATVers have receive capabilities at this time and 15 more ATCO ATVers have digital receivers on order as all involved are quite excited about this new "play toy".
W8RUT 5.5 miles (also mobile), WA8RMC 11 miles, W8SJV 22 miles, KB8SSH 5.5 miles (also mobile) and KB8YMQ 16 miles

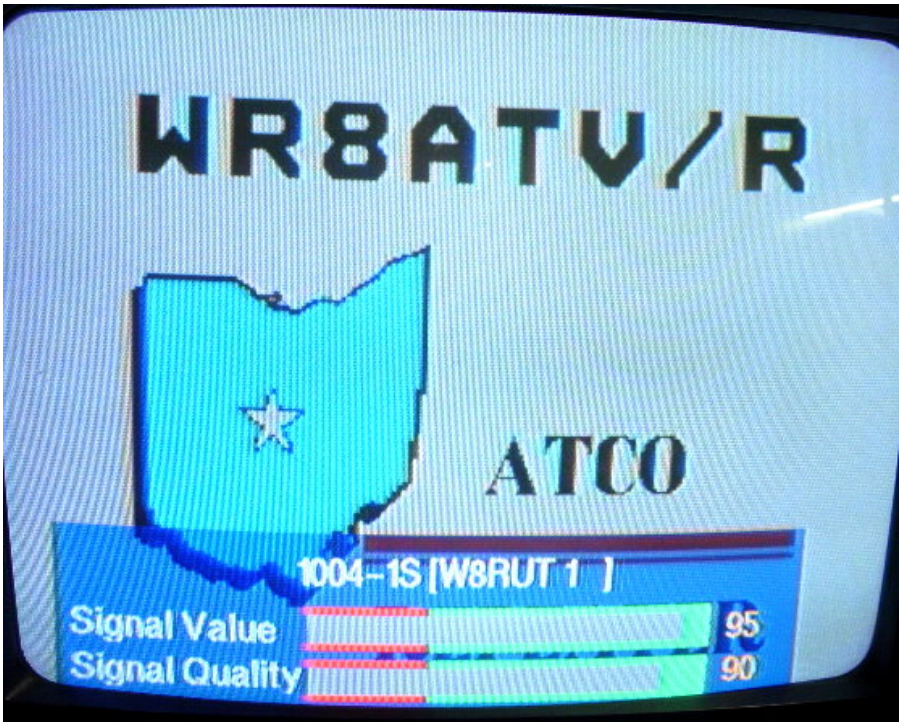
During our limited tests so far, we have noted some significant operational features. First, the mobile operators noticed the lack of fading as they drove around the city. The picture stayed crisp and steady. Second, the usual analog rolling from irregular sync signals sent to the repeater were reconstructed as stable crisp signals. Also, color is constant. No more do we have to report, "perfect P5 picture but no color". The sometimes weak color burst is now regenerated to standard levels. At this time, we DO have some unusual pixelation effects that seem to come and go even though the receiver reports 90%+ signal and error quality levels. My receiver, at times, powers up in a locked "signal capturing" mode for some strange reason. A power down and up sequence usually restores it. Another strange effect is that the received signal is delayed for up to 2 seconds after the analog signal arrives. (We also have a 1250 MHz analog ATV output). When the monitors are side by side, I can wave at myself and see an instant response in the analog signal while the digital signal waves 2 seconds later. Strange! I said that one could check out their own head bald spot by turning quickly while staring into the camera! Much more fun is to come, I'm sure, with our new "play toy".

Below is a spectrum analyzer glimpse of the 1260 MHz signal received at the QTH of W8SJV 22 miles away. Note that the repeater 1250 MHz 50 watt analog signal is the stronger waveform on the left portion of the spectrum analyzer. That compares to the 1 watt digital signal on the lower right. For the record, both antennas are the same gain and at the same height. The bottom picture is what the signal looks like on his monitor. Note the signal bar graphs at the bottom, which is receiver selectable.
We hope to have much more to report by Dayton Hamvention time. Stay tuned!

…Art, WA8RMC

Our 1250 MHZ FMATV Output (50 watts)

Our new 1260 DATV Output (1 watt)



ATCO DIGITAL AMATEUR TELEVISION… ON THE AIR!

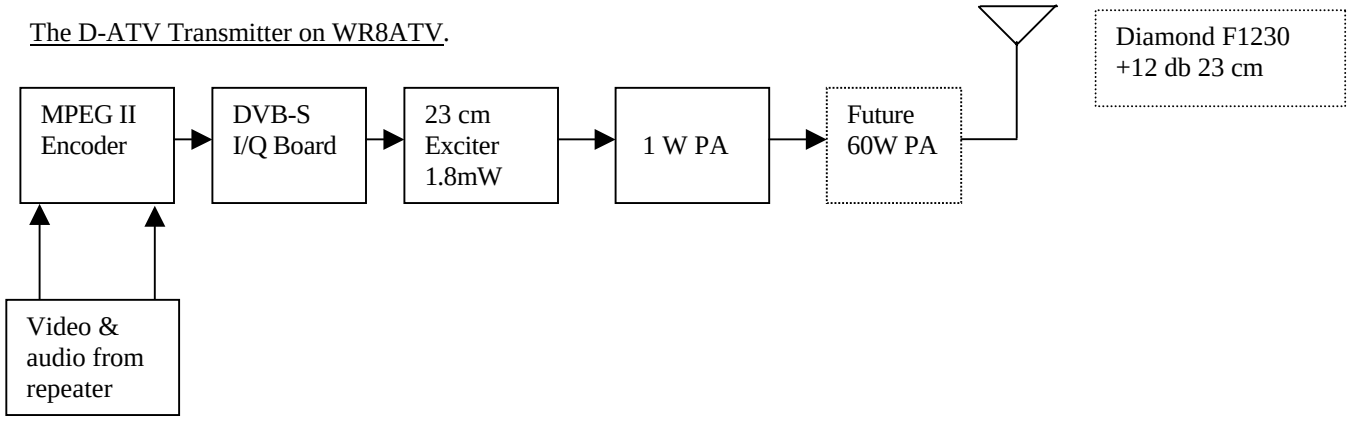
On January 9, 2005, the ATCO ATV Repeater, WR8ATV, was up-graded by W8RUT & WA8RMC with a Digital-ATV (D-ATV) output running QPSK (DVB-S) on 1260 MHz. Among the first to see the new D-ATV output as soon as it came on for the first time was KB8YMQ (16 Miles), W8SJV (22+Miles) and KB8SSH (6miles). Leaving the repeater site after installation, W8RUT/mobile watched the D-ATV output all the way home (route of 6 miles). All receiving stations were using Free to Air (FTA) satellite receivers.

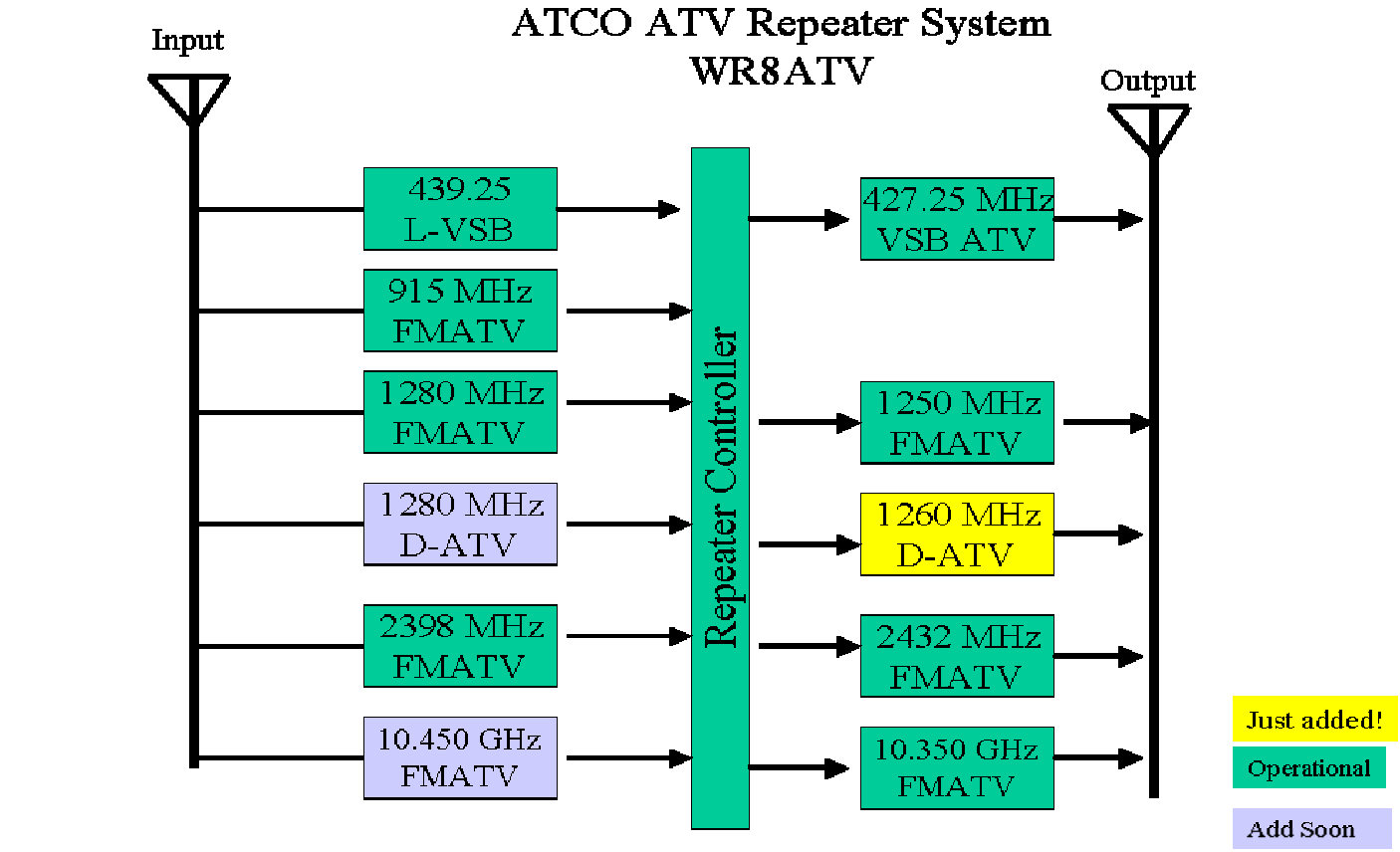
We believe we're the first US ATV repeater, and maybe all of the America's, to start-up D-ATV on an amateur repeater.

The addition of the D-ATV output comes after two and half years of planning and waiting for components. The new output, running only one (1) watt of power as of this writing is built from D-ATV modules supplied by *Spectra* BV in Holland.

All of the reports received on that first day were P5+! Given the nature of D-ATV, we have since informally updated the signal reporting standard to "Yes and No!" meaning Yes, I see it!... or.... No, I don't! For those stations that are already capable of receiving the 1250 MHz FMATV repeater output, they only need to add a "Free-To-Air" (FTA) DVB-S compliant Satellite receiver to their existing 23-cm antenna to receive D-ATV from the repeater. In fact, some stations loop the antenna to both their analog satellite Rx and their DVB-S Rx to watch both outputs at the same time with one antenna. In mid-January we should have nearly 20 stations in Central Ohio equipped to see the D-ATV output from the ATCO repeater WR8ATV.

The D-ATV Transmitter on WR8ATV.





The current D-ATV exciter/PA was received for a European supplier in early December 2004. A number of point-to-point tests and configurations were explored by W8RUT while WA8RMC packaged the modules to be integrated with our existing repeater. Most of this work and learning (a lot new to learn with D-ATV!) took place over the Christmas holidays.

The basic exciter is a 3-board set including the MPEG 2 encoder, the DVB-S I/Q board and the 23-cm synthesized exciter which is capable of operating anywhere in the 23-cm band. The exciter set of PCB's is configured via an RS 232 link to a PC with a very capable supplied configuration software application.

Given the complex waveform of QPSK, power amplifiers need to be very linear as not to distort the QPSK signal decoded by the digital receivers. The only PA available in my shack was a 10mW in/3-watt out Power Amplifier using a M67715 hybrid brick from Downeast Microwave. Looking at the specs, this PA it appeared likely not linear enough for DVB-S service, but we tried and it works! Stations over 22 miles away from the repeater site report strong signals as shown on the spectrum analyzer picture from W8SJV. With 1.8mW from the exciter, the PA has an output of just over 1 Watt. We may have, by dumb luck, found the sweet spot of this PA to run in DVD-S service! More tests are required to confirm this conclusion however.

Our target level of power out is 60 watts of D-ATV on 23 cm. With a 10-dB gain antenna, located 650 feet above street level, the signal should cover most of central Ohio. Since all of our WR8ATV repeater transmitters 70 through 10 GHz cover central Ohio, we have confidence to expect our D-ATV signal to do as well.

Receiving D-ATV

One of the main reason for selecting Quadrature Phase Shift Keying (QPSK, a.k.a. DVB-S) as our ATCO D-ATV standard was the relative inexpensive receiver availability. Selecting 8-VSB/ DVB-T (Terrestrial) or QAM (DVB-C) would have been more difficult and expensive for stations to acquire receiving equipment ready to use in amateur service. We do have a transmitter capable of 8-VSB running on 70 cm, but that will be another project!

Receivers for DVB-S are from the "Free to Air" service normally used in C and/or Ku band down links from satellites. THIS IS NOT TO BE CONFUSED WITH "*DirecTV* OR *DISH NETWORKS*- they use another standard, not compatible with DVB-S. Receivers for DirecTV or Dish will not work with our D-ATV repeater output. The most popular receiver in service by our ATCO members are used receivers purchased from a broker on eBay for $59 delivered. I understand this broker has well over 1,000 available for sale! N8IJ has been able to make a group purchase to get the price in the $50 range, delivered. The receiver comes with a power cord and a remote. The user manual can be down loaded from his website or his eBay listing.

Once the receiver has been acquired, connect the Sat-Rx to a monitor. If the picture is rolling or only in B/W, make sure the Sat-RX output is NTSC- use the "next" button on the remote. Go to the set up menu via the remote: Enter the following numbers:

LNB L.O.	10750000	KHz
Down link Frequency	12010000	KHz
Symbol rate	3125	K/bits
LNB Power	None*	* no Preamp set to zero/or 14V if preamp

The other configuration choices set to **off.**

Our output frequency on the repeater is 1260 MHz. To set the receiver to receive 1260, you need to tell it it's connected to an LNB transponder with a frequency of 12.010 GHz. and a local oscillator of 10.750Ghz. (The L.O. minus the received frequency must equal 1260 MHz)! These numbers are entered as KHz so that is why all of the extra zeros!

The symbol rate of the transmitter was set at 3.125 M/Bits, which is about a 4 MHz total bandwidth. I used a highly analytical approach to select this symbol rate that I will not repeat here. The other parameters such as FEC (Forward Error Correction) the Rx will automatically adjust for them.

After configuration, connect your 23-cm antenna via the "F" connector and look for the signal! Pressing the "info" on the remote will put an on-screen Signal Level and Signal quality display as an overlay to the repeater output. Any values over 30% is OK for signal level. If you don't get a picture at first, select **info** anyway and it may give you a hint of the problem.

So what's next?

We are early in the D-ATV game; there are only three things next;

1. Learn a great deal more about D-ATV!
2. Up-the power of the repeater D-ATV Tx to about 60 Watts.
3. Put on the repeater's D-ATV receiver. At this point we are planning to put it on the same frequency as our FMATV input- 1280 MHz and connect it to the same antenna system.

Items 2 & 3 are easy to do (we already have the Rx for the repeater); item **1** however, will take a lot more time!
…Ken, W8RUT

WELCOME TO THE WORLD OF DIGITAL AMATEUR TELEVISION!

The following material has been compiled and edited with the aid of the descriptions at the Dutch ATV web site to make it easier to read for the beginner. The complete unedited text may be seen at the Dutch Amateur TV web site http://d-atv.com. Ed.

A New Standard For Amateur Television

Digital Amateur Television, formally known as D-ATV, is growing in popularity. D-ATV is based on the Digital Video Broadcast Satellite standard, which has been developed by the DVB organization. We, the Dutch team consisting of pe1jok and pe1obw, have designed a digital modulator according to the DVB-S standard for amateur and professional purposes. We understand that the design and construction of a digital transmitter will be too complex for most of us. However, many of us will start exploring this new area of our hobby. More and more ready built D-ATV transmitters will be sold in the near future including our design. Therefore it is important to be aware of the advantages, disadvantages and inherent problems with this new digital modulation scheme.

The following should give you more insight to the world of digital transmission. This will be done with a more or less theoretical description of the different modulation techniques and the inherent problems. We believe that some knowledge must be present among us when we use digital video transmissions in the future. Furthermore we will discuss some of the different professional standards that currently exist for digital video broadcasting (DVB-S, DVB-C and DVB-T) and the possibility for using these standards for amateur purposes.

DVB-T

The DVB-T standard was developed for terrestrial digital television communication and is presently in use by US broadcast television stations for digital and HDTV known best as 8VSB modulation (8 quadrant Vestigial Sideband). The aim is to overcome the destructive effects of multipath reflections from objects in the signal path such as buildings and towers, which produce “ghosts” in the picture of analog transmissions. In digital television transmission, the data rates are very high so multipath reflections will normally be even higher resulting in a partly distorted received signal. Also the multipath reflections cause Inter Symbol Interference because reflections of the received signal interfere with the direct received path. Nevertheless, higher bit rates (symbol rate) produce higher negative effects so, to overcome these disturbances for DVB-T the effective bit rate is spread out over a large amount of digitally modulated carriers. The larger the amount of carriers produces lower effective bit rates for each carrier. The lower the effective bit rate per carrier, the lower the negative effects of multipath reflections that is the basic idea behind DVB-T. This produces a very complex signal so it is the hardest to reproduce and most expensive because it requires very high speed parts. It’s necessary for broadcast TV but not practical for amateur purposes so we look farther.

DVB-C

The DVB-C standard was developed for cable digital television transmission using QAM modulation. A cable environment is a relatively protected environment with respect to distortion and signal path attenuation so a higher signal to noise ratio can be achieved. Also, because there is no negative effect from multipath, it is able to implement higher order modulation schemes. DVB-C generally requires higher signal to noise ratios at the receiver side due to the higher order modulation schemes. As a result of minimal error correction, it is more susceptible to multipath reflections. This is one reason why DVB-C is not preferred for Digital Amateur Television. It’s too bad because it’s the easiest and cheapest method. It should be noted that various cable companies with some using 8VSB or QPSK implement DVB-C in a variety of forms so no one uses a common standard. This is not a surprise because a given cable company wants you to use THEIR set top box and not the competition. Therefore a cable box for one cable company will not work for another. We wouldn’t want to become a part of this fiasco so we look farther!

DVB-S

The DVB-S standard is developed for satellite digital television transmission using QPSK modulation (Quadrature Phase Shift Keying), which is a type of FM modulation. Why do we recommend D-ATV use the commercial DVB-S standard? Let’s start by reviewing why we want to switch to digital in the first place (aside from the fact that it’s new and cool to try). A digital system has some distinct advantages and also some disadvantages.

One of the main advantages of a digital ATV system is the fact that picture quality is improved above that of most analog systems. We do not encounter the negative effects of noise. We do not encounter video group delay problems; an item on which much attention has been paid by lots of amateurs and audio quality is improved. With digital ATV we get high quality audio channels and these high quality audio channels don't even disturb our picture quality! Also it does not extend our occupied bandwidth of our signal, something that is the case with the analog way where we do need some FM modulated audio carriers above our video signal. Other main advantages are the fact that analog ATV systems occupy a lot of bandwidth. A wide occupied bandwidth means several disadvantages among which are, 1) less room for others to communicate and, 2) a higher noise bandwidth.

The first item is clear. We want to be as efficient as possible. If this can be done without throwing away any quality then this is nice. If we even can improve quality with less occupied bandwidth then we have even more profit! The second item is also very interesting. The higher the bandwidth the higher the received noise level will be at the receiver because noise is integrated over bandwidth. Some digital modulation schemes are able to demodulate at lower threshold levels than possible with analog FM ATV systems. One of them is for example QPSK. With QPSK we are able to occupy less bandwidth and also make use of lower thresholds. This means that we

can get more out of such a system with **less power, better quality and less bandwidth**!

A satellite to earth system needs low threshold demodulation and a good signal to noise ratio so only QPSK can be used. QPSK is a very robust modulation scheme because it just has to make a decision in one of four quadrants. The low signal to noise ratio on the other hand will be a source for bit errors, both burst errors as single bit errors. To overcome this weakness, the DVB-S standard uses different layers of Forward Error Correction (FEC) for a very robust protection against any kind of errors. The FEC consists of a Reed Solomon coding that protects against burst errors and also additional convolutional interleaving to spread out the impact of burst errors. The convolutional encoding is better known among users of satellite television and is recognizable in a satellite receiver setup menu under the menu item FEC rate. The fact that satellite communication is basically line of sight communication without obstacles in the transmission path tells us that less attention is paid in this system on multipath effects. Therefore, the DVB-S standard will be moderate when it comes to robustness against multipath reflections.

Mathematically all these carriers are orthogonally spaced from each other with the **Inverse Fast Fourier Transform** called **IFFT**. It works as follows: The incoming bitstream is encoded with Forward Error Correction blocks like Reed Solomon and convolutional interleaving and finally convolutional encoding. After the FEC the resulting bitstream is mapped on all the constellations for the separate carriers. The resulting constellations are the input for the IFFT processor block which performs the actual transformation from frequency to time domain. After the IFFT a cyclic extension is performed on the resulting OFDM symbol, which is used for the guard interval that gives additional protection against multipath reflections. The resultant complex output of the IFFT block can then be converted to RF with an I/Q modulator.

There is still a large disadvantage left. QPSK using OFDM modulation requires very linear amplifiers surpassing the requirements of present SSB linear amplifiers. The large amplitude swings of the carrier will introduce very high intermodulation levels when the signal is non-linearly amplified. Although QPSK is quite robust and will still work correctly with quite high spectral regrowth levels, there is also a need to transmit a nicely shaped spectrum in order to be spectrally efficient. As stated before, D-ATV generally will need less power compared to FM TV techniques but this will **not** mean that the amplifiers need to be smaller! In fact, in order to keep spectral regrowth levels low enough, power amplifiers will need to be biased class A and the output drive levels need to be in the order of **7-10 dB below the 1dB compression point** to keep spectral regrowth below -40 dBc. Commonly used class AB power brick modules can now be thrown away so we can build our own very linear amplifiers again.

In summary, DVB-S has high error protection, uses very robust QPSK for modulation requiring low signal to noise ratios for proper demodulation but isn't the best choice against multipath. However, the fact that lot of foreign experiments ended with very positive results demonstrates that these negative effects are smaller then expected. Besides that, a lot of cheap commercial set-top boxes exist that is a major advantage for D-ATV use. Conclusion: DVB-S is the best choice so far for D-ATV.

I hope I didn’t bore you with the technical talk. I tried to simplify the process while giving an insight to the really complex nature of the overall process. No, you don’t have to research the Inverse Fast Fourier Transform process to get a grip on what’s going on but it’s kind of nice to be educated enough to be able to say, “Yes, I’ve heard of that process before. It’s needed to encode and decode the digital TV process”. End of story!
…WA8RMC

DVB-S RECEIVERS FROM Ebay…here are some details.

As you know, Dick, N8IJ, has secured a quantity of digital receivers of the kind we need for digital ATV reception from our repeater. The following is some more detail as to what these receivers are and where to get them.

The receiver we have tried with good success is a Viacom Quantum MSR unit available from ME Engineering on the web site, www.middletowneng.com. Go to the “products” section and click on “For Sale used DVB/IP”. The Quantum receiver will be displayed. You will be able to view the Data sheet and Users guide for that product there. N8IJ has made a quantity purchase and was able to secure **NEW** units for $55.00 each. The receiver works great! It even has a signal quality and signal strength bar graph selectable on screen if desired. If you can’t find the data sheets, I have downloaded both and will make them available to anyone wishing to review the data.

Ken, W8RUT has purchased a few other DVB-S receivers that seem to work excellently as well. One is a miniature receiver that seems to have better sensitivity and produces fewer errors than the unit above. Ken tried to find out more about it with no success so far. It appears to be a one of a kind item. More info later.

HAPPY DIGITAL ATV VIEWING!
…WA8RMC

NEW MEMBER(S)

Let's welcome the new members to our group! If any of you know anyone who might be interested, let one of us know so we can flood him or her with information. New members are our group's lifeblood. It's important that we actively recruit new faces aggressively.

N8IJ Dick Knowles, Columbus
K4NQV, Dean Maggard, Bowling Green, Ky
KB8SSH, Mike Cotts, Columbus
KC8YPD, Joe Ebright, Columbus
WB8PJZ, Dave Morris, Lima Ohio

…WA8RMC

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.

6 Feb 2005 +NOARS Winterfest Northern Ohio Amateur Radio Society http://www.geocities.com/k8krg/winterfe.htm **Talk-In:** 146.700/R- **Contact:** Tom Porter, W8KYZ 161 Herrmann Drive Avon Lake, OH 44012 Phone: 440-930-9115 Lorain, OH Gargus Banquet Hall 1965 North Ridge Road **Div:** Great Lakes **Sect:** Ohio 13 Feb 2005

13 Feb 2005 Mid*Winter Hamfest and Computer Show InterCity ARC http://www.iarc.ws Talk-In: 146.94 (PL 71.9) Contact: Deane Wrasse, KB8MG 1094 Beal Road Mansfield, OH 44905 Phone: 419-522-9893 Email: deanwrasse@yahoo.com Mansfield, OH Richland County Fairgrounds 750 North Home Road

19 Mar 2005 Great Lakes Division Convention Toledo Mobile Radio Association http://www.tmrahamradio.org Contact: Brenda Krukowski, KB8IUP 9408 Salisbury Road Monclova, OH 43542-9700 Phone: 419-260-4310 Email: kb8iup@arrl.net Toledo, OH

20 Mar 2005 +TMRA Hamfest Toledo Mobile Radio Association http://tmrahamradio.org **Contact:** Brian Harrington, WD8MXR 4463 Holly Hill Drive Toledo, OH 43614 Phone: 419-385-5624 Email: bharrington@mco.edu Maumee (Toledo), OH **Div:** Great Lakes **Sect:** Ohio

3 Apr 2005 +Lake County ARA http://www.lcara.org **Contact:** Rocky, KB8WFD 7480 Fern Drive Mentor-on-the-Lake, OH 44060 Phone: 440-209-8953 Email: kb8wfd@adelphia.net Madison, OH **Div:** Great Lakes **Sect:** Ohio

9 Apr 2005 +Jackson County Amateur Radio Club **Talk-In:** 146.790 - no tones **Contact:** F. Edgar Dempsey, KD8XL 110 Morton Street Jackson, OH 45640-1335 Phone: 740-286-3239 Email: kd8xl@bright.net Coalton, OH James A. Rhodes Community Center State Route 93 South **Div:** Great Lakes **Sect:** Ohio

17 Apr 2005 +Cuyahoga Falls ARC http://www.cfarc.org **Contact:** Ted Sarah, W8TTS 239 Bermont Avenue Munroe Falls, OH 44262 Phone: 330-688-2013 Email: w8tts@w8tts.com Cuyahoga Falls, OH **Div:** Great Lakes **Sect:** Ohio

24 Apr 2005 +Athens County Amateur Radio Association http://www.ac-ara.org **Talk-In:** 145.15 **Contact:** Drew McDaniel, W8MHV 61 Briarwood Drive Athens, OH 45701 Phone: 740-592-2106 Fax: 740-593-9184 Email: dmcdaniel1@ohiou.edu Athens, OH Athens Recreation Center 665 East State Street **Div:** Great Lakes **Sect:** Ohio

20-22 May 2005 *Dayton Hamvention / ARRL National Convention Dayton ARA http://www.hamvention.org **Talk-In:** 146.94(-), 146.91(-), 223.94(-), 442.1(+) **Contact:** Hamvention PO Box 964 Dayton, OH 45401-0964 Phone: 937-276-6930 Fax: 937-276-6934 Email: info@hamvention.org Dayton, OH Hara Arena 1001 Shiloh Springs Road Trotwood, OH **Div:** Great Lakes **Sect:** Ohio
6 Aug 2005 +Ham "OH" Rama **Contact:** James Morton, KB8KPJ 6070 Northgap Drive Columbus, OH 43229-1945 Phone: 614-846-7790 Email: kb8kpj@arrl.net Columbus, OH **Div:** Great Lakes **Sect:** Ohio

LOCAL HAM CLUB LISTING

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

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

INTERNET ATV HOME PAGES (list verified 01/18/02)

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. (For comments or additional listings contact me at towslee@ee.net).

Note: The listings below without URL's have disappeared! If any of you know otherwise, let me know.

Domestic homepages

http://psycho.psy.ohio-state.edu/atco	Ohio, Columbus, homepage (ATCO)
http://www.activedayton.com/community/groups/rmeeksjr/index.html	Ohio, Dayton ATV group (DARA)
http://users.erinet.com/38141/atv.htm	Ohio, Xenia KB8GRJ
http://www.qsl.net/ka8mid	Ohio, Chilicothe area, KA8MID homepage
	Alabama - Gulf Coast Amateur Television Society
http://www.hayden.edu/Guests/AATV	Arizona, Phoenix Amateurs (AATV) Carl Hayden High School
http://www.w7atv.com	Arizona, Phoenix Amateurs(AATV)
http://www.citynight.com/atv	California, San Francisco ATV
http://www.qsl.net/atn	California, Amateur Television Network in Central / Southern
http://www.qsl.net/scats/	Florida, Melborn Space Coast Amateur TV Society (SCATS)
http://www.bsrg.org/aatn/aatn1.html	Georgia, Atlanta ATV
http://members.tripod.com/silatvg	Illinois, Southern, Amateur Television group
http://www.ussc.com/~uarc/utah_atv/id_atv1.html	Idaho ATV
	Kentucky, Lexington Bluegrass ATV Society (BATS)
	Kansas, Kansas City Amateur TV Group (KCATVG)
http://www.bratsatv.org	Maryland, Baltimore Radio Amateur Television Soc. (BRATS)
http://www.icircuits.com/dats	Michigan, Detroit Amateur Television System (DATS)
http://come.to/amateurtv.mn	Minnesota Fast Scan Amateur Television (MNFAT)
	Missouri, St Louis Amateur Television
http://www.qsl.net/kd2bd/atv.html	New Jersey, Brookdale ARC in Lincroft
http://www.no3y.com/radio.html	New Mexico, Farmingham
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-clan.com/amateur_radio/klamath_amateur_television.htm	Oregon, Southern Oregon ATV
http://www.nettekservices.com/ATV/	Pennsylvania, Pittsburg Amateur Television
http://members.bellatlantic.net/~theojkat	Pennsylvania, Phila. Area ATV
http://www.geocities.com/Hollywood/5842	Tennessee, East ATV
http://www.hats.stevens.com	Texas, Houston ATV (HATS)
	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
	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.sfn.saskatoon.sk.ca/recreation/hamburg/hamatv.html	Saskatoon, Canada ATV
http://www.gpfn.sk.ca/hobbies/rara/atv3.html	Regina, Canada ATV
http://www.inside.co.uk/scart.htm	UK, Great Britain ATV (SCART)
http://www.cmo.ch/swissatv	Swiss ATV
http://www.rhein-land.com/atv	German ATV in "Niederrhein" area
http://www.arcadeshop.demon.co.uk/atv/	UK, G8XEU ATV homepage
	British Columbia, Canada VE7RTV repeater
	Auckland, New Zealand 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.

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 QPFK 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 1 watt 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, 2433 & 10.35 GHz transmitters video identify every 30 minutes showing ATCO & WR8ATV on four 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
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 tri-band vertically polarized 12 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 (future – 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 transmitters on till 00# sequence is pressed)
	264	Select Channel 4 doppler radar. (Stays up for 5 minutes) Select # to shut down before then.
	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 receive 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 2411 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 2411 receiver audio
	C0* or C0#	Beacon mode – transmit ID for twenty seconds every ten minutes
	C1* or C1#	427.25 transmitter power output select (C1* = 40W output power or C1# = 1.5W output)
	C2* or C2#	2433 transmitter for on/off. (C2* enables transmitter and C2# disables it)

Auto scan mode functions:		
	001	2411 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 viewing camera so repeater will shut down**)**

ATCO MEMBERS AS OF January 26, 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	
W8CQT	Jim McConnell	350 N. State Road	Delaware	OH	43015-9644	740-363-1008	w8cqt@arrl.net
WB8CJW	Dale Elshoff	8904 Winoak Pl	Powell	OH	43065	614-210-0551	delshoff@columbus.rr.com
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		
N8IJ	Dick Knowles	4750 Larwell Dr	Columbus	OH	44323	614-451-0273	
WD8ITF	Larry Fields	953 W. Hopocan Ave	Barberton	OH	44203-7007	330-825-7148	lfields@neo.rr.com
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		deverterhf@dejazzo.com
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		mvdiaz@suffolk.lib.ny.us
KC8LZC	Tom Walter	15704 St Rt 161 West	Plain City	OH	43064	614-733-0722	twalter@emec.us
W8MA(ex wa8tte)	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	Rt 5 Bx 4444 Sandusky Rd	Lima	OH	45801		dmmorris@bright.net
K4PRS	Peter R. Sinkowski	4532 W Kennedy Bl #114	Tampa	FL	33609-2042		k4prs@yahoo.com
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 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@bright.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		
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	8287 Creekstone Lane	Blacklick	OH	43004	614-751-0476	
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
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		
N8YZ	DaveTkach	2063 Torchwood Loop S	Columbus	OH	43229	614-882-0771	
KB8ZLB	Dave Kibler	243 Dwyer Rd	Greenfield	OH	45123	937-981-4007	s.crew@dragonbbs.com
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.

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 TREASURER'S REPORT - de N8NT

OPENING BALANCE (07/19/04)..... $ 2091.17
RECEIPTS(dues)..... $ 402.00
Power supply sales..... $ 10.00
Comtech module profits..... $ 250.00
January Pizza Party..... $(114.16)
October Newsletter postage..... $ (45.00)
Fall Event food and pop..... $(194.90)
Banc One service fee..... $ (10.00)
Pay Pal service fee..... $ (4.54)
CLOSING BALANCE (01/26/05)..... $2383.98

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

FIRST CLASS MAIL

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