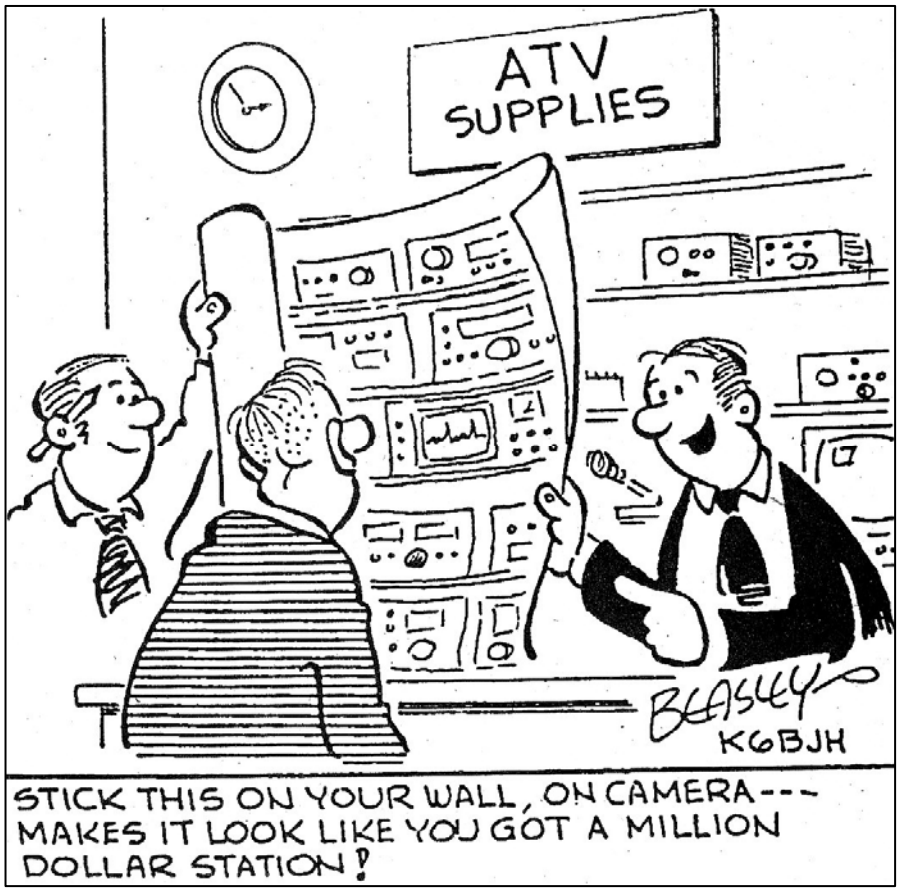
ATCO NEWSLETTER

VOLUME 31 NUMBER 1 **January 2014**

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 SPOTLIGHT TOPIC

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



ACTIVITIES ... from my Workbench

ATCO ATVers, it's Newsletter time. I notice that ATV activity seems to be at an all time low. I wonder why. It's said that Amateur Radio licenses are on the rise for a third year in a row. However, I see the ATV activity here going in the other direction. What can we do??? Well, one way is to talk to your buddies and tell them how much fun it is. Convince them that it is NOT expensive. After all, since the commercial digital TV transition, it's become easier to receive our signal as all commercial flat panel TVs can see our signal direct without the need of a converter of any kind. Simply tune to cable channel 57 or 58, connect an outside antenna, then sit back and watch as we have a standard QAM TV signal on digital channel 57 and analog TV on the analog cable channel 58. Read further for details.

On the repeater side, a "new" signal has appeared on our ATV 1280 MHz input frequency. It turns out to be a new FAA / Homeland Security radar located in London, Ohio as reported in the last ATCO Newsletter. As you could expect, we had to move our 1280 MHz input frequency. We relocated it to 1288 MHz which is above the requested 1275-1285 MHz "keep out" zone. It has been operating on an input frequency of 1288 MHz for about 2 months now with no problems. That will require anyone wishing to use the 1280 input for either analog or digital to change their transmit frequency to 1288. If anyone is using a Comtech board with the old PIC IC in it will need to be replaced it with a new frequency agile Microchip PIC IC. I have these so contact me for details. Asking price is only the cost of the chip alone which is $4.00. Repeater signals received on 1288 still shows momentary radar flashes every 15 seconds when their antenna swings around in this direction but is the best we can do under the circumstances. The input filter cannot be made selective enough to accept 1288 signals with little loss and reject those at 1280 with high loss.

The new repeater QAM signal is on the air now. I can receive it here with my horizontally polarized beam but not very much above the noise floor. I'm sure that if I turn the beam 90 degrees so it is vertically polarized, it will get much better but this is not a good time of the year to do that. If it warms up a bit I may try but if not, this May seems like a good time to plan for it. I'm interested to hear if anyone else has seen it. Since it's only a 2 watt signal, it may not be available to many of us. Hopefully if all goes well, we can replace the analog signal with it to get a lot more power. We'll leave it alone for the time being.

On the personal front, I've been working on a new automated winch for my tower. Right now I have to go outside and manually push a button to raise and lower the tower so I can see it as it travels. My new custom design winch will have a new wireless control with safety limit switches so I will be able to raise and lower it from the ham shack. Since I love to do machine work, the winch itself is a special lathe turned spindle fitted with a custom motor but all of this takes time. Now, about 3 weeks into the project and a garbage can full of aluminum lathe turnings, I'm almost done. Boy, I hope this works as planned!!!!!!!!!!!! I probably will have to wait till spring to install it however because I hate working on this stuff in the snow!

In the meantime, my snow blower needs attention. It stalled on me the last time I used it because, what I think, is a stuck carburetor choke. I want to move it to the basement to fix because, as I just said, working on stuff like this in the cold is not my idea of fun. (It's fixed now so I'm ready for the next snowfall which is scheduled for this weekend)

Don't forget the pizza party coming up on February 1, 7PM at Tommy's Pizza on Dublin Granville Road across from the Wendy's corporate offices. It's on the south side of the street next to Oakland Nursery. We will have an "almost 10" and 20 year signal celebration cake to enjoy as well as good pizza.

Also, as you may know by now, John, W3SST, is selling his Ham equipment he has collected over the years. His wife, sister and brother will organize the items and hold a "mini Hamfest" in their garage on Sunday, January 26, starting at noon. Anyone interested should drop by to seewhat they can find. Contact them at the phone listing later in this Newsletter for further information.

That's all for now guys. Hope everyone had a great Holiday and New Year. Let's start 2014 with increased ATV activity. Stay warm!
…73, WA8RMC

SLOW SCAN ATV FROM THE ISS!

From ARRL Web site October 31, 2013.

ARLS001 RS0ISS Active on SSTV from International Space Station

Dmitry Pashkov, UB4UAD, reports that the Amateur Radio slow-scan television (SSTV) experiment onboard the International Space Station has been active for the past couple of days on 145.800 MHz FM, mainly while the ISS is above Moscow. UB4UAD says that on October 31, RS0ISS will transmit SSTV images showing images from the life and work of the first cosmonaut, Yuri Gagarin.

Stations can view the SSTV pictures from the ISS by making a simple audio connection between the receiver output and the computer soundcard input and using one of the free SSTV programs, such as MMSSTV (for Windows systems) or the SSTV app (for Apple iOS devices). Details are on the AMSAT-UK website at, http://amsat-uk.org/2011/08/01/1490/.

Failing a hard-wired connection, just holding a microphone connected to the PC soundcard in front of the receiver's speaker should provide sufficient audio to decode the SSTV signal. SSTV images from the ISS typically are in Martin 1 format.

The ISS Fan Club website at http://www.issfanclub.com/ indicates when the ISS is within range. The Energia page at http://www.energia.ru/eng/iss/researches/education-26.html has more information on the SSTV experiment, designated MAI-75.

LIMA REPEATER UPDATE

Art, we have installed our ATV antenna at the 240 foot level of the WZRX tower site 4 miles south of Lima. Right now we have color bars and my call on the air on 439.25. We are vertical. My cell is 419-516-7164. Please pass this along to your group. Thanks …Dave Morris 11/01/2013

HAIR SALON CAUSES CELL INTERFERENCE

Excerpt From TV Technology Magazine Nov 04, 2013 shown here in part. For complete article see: http://www.tvtechnology.com/distribution/0099/fcc-cites-hair-salon-for-cell-site-interference-/222148.

FCC issued a Citation and Order against the operator of an incidental radiator for causing interference to an AT&T cell site transmitting on 705 MHz. The interference wasn't from a computer or electronic device, but rather from fluorescent lighting fixtures.

In response to an FCC inquiry about the interference, the owner said that the lighting wasn't causing him any problems and he saw no reason to repair or replace the fixture.

The FCC directed them “to describe the steps he has taken or plans to take to eliminate the harmful interference caused by his incidental radiators, i.e., lighting fixtures, as well as a time line for any pending corrective actions, within thirty (30) calendar days.” It warns, “A failure to respond in writing, or an inadequate, incomplete, or misleading response, may be subject to additional sanctions.”

The Citation noted: “If, after receipt of this Citation they again violate Section 15.5(b) of the Rules by engaging in conduct of the type described herein, the Commission may impose monetary forfeitures not to exceed $16,000 for each such violation or each day of a continuing violation, and up to $112,500 for any single act or failure to act. The Citation stated that failure to comply could also result in seizure of equipment and even imprisonment.

For specifics see the Citation and Order (DA 13-2077).

Possibility similar fixtures in different businesses around the country are radiating signals in the UHF band strong enough to interfere with cell phone sites and possibly Ham operators. Such devices are also likely to cause interference to TV reception, but with the transition to digital, viewers no longer see slowly rolling bars from interference modulated with 60 Hz and multiples of 60 Hz rolling through the picture to give them a clue that local interference is the reason they can't get that channel.

DATV DX UPDATE

The tropo season was good around the English Channel this past fall. Some new 70 cm DATV DX records were reported at the BATC CAT13 convention. The longest signals received which occurred over a two day period was 696 KM…between F1 FY and G8GTZ. At CAT13, Noel G8GTZ showed a screen shot of a perfect P5 (D5?) F1FY test pattern being received from F1FY.

I am still hoping to see if any 1.2 GHz records QSOs happened during the IARU International ATV contest. I just don't know where the IARU contest results get published yet?

Known Digital-ATV DX Records updated 2013-12-01 by Ken W6HHC

24 GHz
124 KM JA6DME & JA6EES 2011-11-12
Locations Mont Ten-Zan and Mont Ge-Zan

10 GHz
450 KM HB9JBC & F4CXQ 2005-06-21
Locations JN40CT (Sardinia) and JN12OH (Spain)

5.7 GHz
341 KM JL1BLF & JH1GED 2011-08-06
Locations Mont Chokai-san and Mont Kashimayari-gatake)

2.4 GHz
252 KM JA6SPI & JA5MFY 2009-11-03
Locations ??

1.2 GHz
440 KM G4KLB & G1LPS 2010-10-11
Locations IO90BR and IO94EQ
(tropospheric ducting - one-way DATV)

419 KM G4KLB & MØDTS 2010-10-11
Locations Bournemouth, England and Yarm, England
(tropospheric ducting)

379 KM VK3RTV(RPTR) & VK7EM 2011-02-23
Locations Mount Dandenong, Victoria and Penguin, Tasmania
(operators VK3BFG, VK3DQ , VK3WWW and VK3TRX)

252 KM JA5GYU & JA6JNR 2009-11-03 (1 Watt)

70 CM
696 KM F1FY to G8GTZ 2013-09-24
(DVB-S 2MS/sec FEC=1/2 - - one way reception)

696 KM G8GTZ to F1FY 2013-09-25
(DVB-S 2MS/sec FEC=1/2 - - one way reception reported by FM)
Locations IO91KH (near Basingstoke) and JN16VB (near Roanne, France)

528 KM G3PYB & F5AGO 2013-09-24
(DVB-S 2MS/sec)
Locations near W YORKSHIRE and JN06DP (near Poitiers, France)

373 KM G8GTZ & F3YX 2013-09-25
(DVB-S 2MS/sec FEC=1/2)
Locations IO91KH (near Basingstoke) and JN18AP (near Limours, France)

121 KM KH6HTV & KØRZ 2011-11-21
(video resolution HDTV 1080i - protocol ITU-T/J.38 QAM-64 - one-way DATV)
Locations Cheyenne, Wyoming and Boulder, Colorado
…de Ken W6HHC

DATV USING DVB-T

Art, here are the first Pictures from WB8LGA to KA8MFD Digital using DVB-T.

(Ed note: DVB-T is the European terrestrial broadcast format that is not compatible with US standards. Set top boxes for this format are not available in the US. However, it seems like a good format to use for point to point communications using the dongles as it doesn't require scanning the receiver to receive a signal. WB8LGA is investigating its use for his RC airplane applications)

WB8LGA was running 1mw power on DVB-T. The distance was about 9 miles as crow flies.

We are using Hides UT100B dongle.
Has transmitter and receiver and duplex operation. Cost US $230.00 from TW. Delivery runs about 10 days to two weeks.
He is now listed on eBay.
We have received pictures with DVB-T receiver dongle on eBay for 14 to 25 dollars.
Still in test stages.
Video format is a little tricky as we attempt to get is done the right way.
Streams are up every morning on BATC and com is 3.930 730am EST. We are doing some testing every morning with digital.
…Ross KA8MFD

LONGTIME ATVer IS SHUTTING DOWN ATV STATION

John Shaffer, W3SST, is in the process of getting rid of his ATV and related equipment. His health is at a point where it is not practical to continue his Ham Radio related activities so he asked for help selling his equipment. The list follows with the items he has of value. Anyone wishing to acquire any of his items is asked to contact John direct at 614-751-0029, Jay KB8YMQ, Roger WA8DZW or myself.

In addition, the family will hold a mini Hamfest in their garage on Sunday January 26 starting at noon to accelerate the disposal of the equipment. All are invited to attend. Please help John and family by giving some of his "prized possessions" a good home! His address is 6706 Gilette Drive, Reynoldsburg, Ohio 43608.

Yasu FT767GX 160-10m transceiver with 6m and 2m modules.
Mirage model D1010 430 MHz amplifier
Mirage B108 2m amplifier
(3)audio/video switch boxes – 4 channel
Kenwood 701A dual band mobile transceiver
Wyman Tridon model DL-1 900/1200 receiver
Tempo RBF-1A SWR meter – 200w & 2kw full scale
PC Electronics TXA5 exciter and RF brick in a metal enclosure
Comtech modules - 23cm Tx and 23cm Rx
Comtech modules -13cm Tx and 13cm Rx
(2) Communication Specialists sub audio tone boxes
Quantum Viacast DATV receiver
DEM 1200MHz preamp pcb only
K1FO – 439MHz antenna
1200MHz loop yagi antenna
Antenna Specialists 2m 12 element Quagi antenna
Astron RS20A 20 amp power supply
Alinco DJ180T handheld 2m radio
ADI AT201 handheld 2m radio
~50 feet of ½" Heliax with UHF connector on one end
Rib cage antenna for 439MHz
…WA8RMC

QAM TRANSMITTER INSTALLED AT ATCO REPEATER

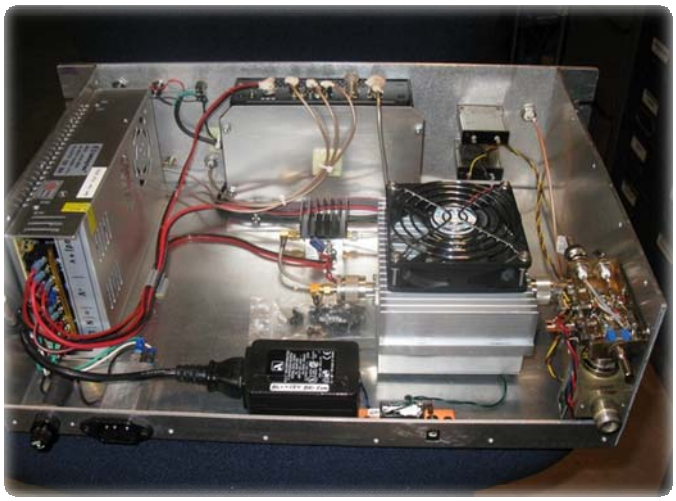
In late November 2013 we installed a new QAM transmitter at the ATCO repeater in Columbus, Ohio. This was basically an experiment to see what reception capabilities exist. Since we already have an analog transmitter on 427MHz and our existing digital transmitter is QPSK on 1258MHz, some discussion took place as to how we wanted to implement this new signal. All other frequencies in the 70cm band are spoken for and replacing the 427 analog transmitter wasn't a good idea either. However, 421MHz which is presently used for analog ATV by the Dayton, Ohio group 75 miles away, seems far enough away that if we use a vertical antenna and stay at relatively low power we wouldn't interfere. Since we already have a spare vertically polarized 70cm antenna in place, it seemed like a no-brainer. If someone complains, we'll most certainly move it.

So far, interference hasn't been an issue. The QAM signal is centered at 423MHz which is the same as 421MHz for an analog signal and is the same as digital cable channel 57. The beauty of QAM on 423 is that all modern flat panel TV sets can receive it on that frequency without modification. The only requirement is that the antenna be vertically polarized. However, I can receive the signal 15 miles away with my horizontally polarized M^2 yagi antenna. Since the output is only about 2 watts, that's pretty good.

The transmitter is a Thor model H-VQAM-SD unit and costs about $500. The output is quite low at about -27dBm so an intermediate amp is needed. A Minicircuits Model ZFL-2500VH is used to boost the RF level to about a milliwatt (0dBm) followed by a Downeast microwave amplifier model DEM 7025PA to output about 2.75 watts. After the interdigital filter, the RF feeding the 8dBi vertical antenna is less than 2 watts. It remains to be seen if the signal will be good enough to eventually replace the 427 analog system!

In any case, I believe we are now the second repeater in the USA to have a QAM output on a repeater. (The ATN group in California is first). However, since we were the first in the country to have a QPSK signal on 1258MHz and the second with a QAM signal on 70cm, we are again the first to have ***multiple*** digital transmitters on a single ATV repeater in the USA!

Below is how the complete transmitter looks. It's a 19" rack unit 5.25" high. The rear view at the right reveals the power supply on the left, QAM transmitter on the far center and DEM power amp on the right. We also installed a "Jones Micromatch" line sampler to be able to monitor the RF output level. It's partially viewed at the lower right.
…WA8RMC



423MHZ ANTENNA FOR THE ATCO QAM TRANSMITTER

Now that we have a QAM digital transmitter at the repeater with a vertically polarized signal, a new antenna is in order, Right? Since antennas for the 70cm band are usually horizontally polarized, it seemed appropriate to provide details for a simple yagi antenna that can be mounted in a vertical polarization configuration. Loop yagis are ideal because it is easy to mount them in either horizontal or vertical polarizations. Because I have much on my plate right now, designing one myself didn't seem like a good idea. Therefore, I decided to scan old ATCO Newsletters for an existing design since I remember seeing at least one construction article there. I found what I was looking for in Volume 9 number 4 of October 1992, courtesy of Dale WA8KQQ. It is reproduced below. Although designed for 439MHz, I'm sure there will be sufficient gain at 423 for acceptable operation. Let us know if you build one and find different spacing and or element lengths.
…WA8RMC

16 Element loop yagi for 439.25MHz

For the boom of my 16 element antenna, I used a 10 foot length of ½" aluminum conduit. All spacing measurements were made from the back end of the boom, and #9 wire was used for the elements. This wire was stripped from surplus ¾" aluminum TV cable which turned out to be #9 copper wire and soldered very well.

The reflectors and directors were cut to length, flattened ½ inch on either end, and formed into a circle. The ends were soldered together and then ground or filed down to wire size. One-half inch conduit clamps (the kind with a bolt through them) were used for the element mounts. I used a file on edge to file a notch across the top of each clamp for the wire ring to set in and soldered the ring to the clamp with a propane torch. This provided a sturdy mount that looked quite decent. The bolt through the bottom of the clamp provides for easy adjustment for tuning the antenna.

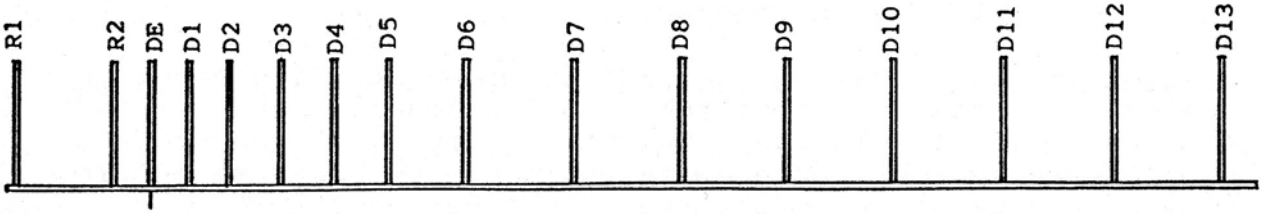
The driven element was made using the same #9 wire flattened on either end and also in the center. A piece of brass tubing from a hobby shop was used for a feed. Drill a hole in one end and in the middle of the #9 wire to pass the brass tubing through and a small hole on the other end of the #9 wire for the center conductor. Form the circle then pass the brass tube through the two large holes and solder. Then set the ring on top of a conduit clamp with the tube passing down through the hole and solder.

Make the measurement for the spacing of the driven element on the boom and then drill a hole through the boom to snuggly pass the brass tube. Slide the tube through the hole and let the clamp spread to snap on the boom. Drill tiny holes on either side of the clamp through the boom and set with two small metal screws. Two different sizes of brass tube can be used. One size will pass the center conductor with insulation (RG-58) or the next size will pass with ground braid, also. I tried both ways and each worked okay.

Pass the center conductor of the coax through the small hold of the driven element and solder. Then solder the braid to the top of the brass tubing. A coax fitting under the boom may be used or a balun may be used if using twin lead as I do.

This antenna is on a test stand at 22 feet and my normal 48 element collinear is at 55 feet. Dick, W8RVH, 42 air miles away on the morning we tested the antennas gave me a P-4.5 on the collinear and a P-3.5 on the loop yagi. This was a very good report considering the difference in height of the two antennas. I also found that on 70 cm the loop tunes differently than on 1.2 GHz. At 1.2 GHz, the loop can be tuned by changing the shape of the driven element. On 70 m, this did not make much change at all, but moving the first director made a considerable change. I think this is a good antenna, and I have just finished the second one. I am going to stack a pair to see what happens.
…WA8KQQ

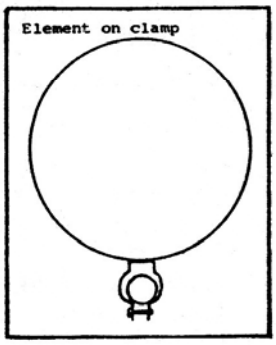
Element information:

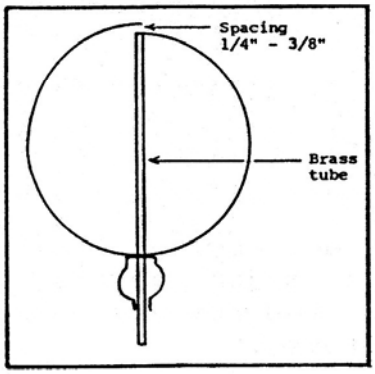


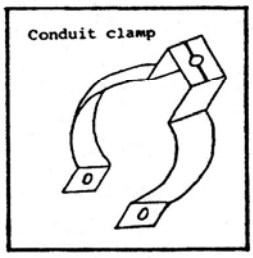
2 Reflectors 29-3/8"; 1 Driven 27-15/16"; 13 Directors 25"

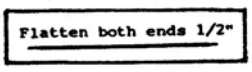
Spacing in inches:

R1 = 1	D2 = 18	D6 = 39-5/16	D10 = 82-1/16
R2 = 9-5/16	D3 = 23-3/8	D7 = 50-1/16	D11 = 92-3/4
DE = 12-1/16	D4 = 28-5/8	D8 = 60-11/16	D12 = 103-7/16
D1 = 15-1/2	D5 = 32-3/8	D9 = 71-3/8	D13 = 114-1/8









ATCO ATV HISTORY IN COLUMBUS, OHIO- A trip down memory lane

Reflecting back, we've been working with ATV activities quite some time. Those memories were brought to the surface when we realized it's been (*ALMOST*) **10 years since we installed the DATV transmitter in our repeater**. Time flies! It's been in operation 24/7 since then! Think about it, 9 years ago we were the first in the USA to provide digital. Today, I believe there is only one other DATV repeater transmitter in operation. It's been a slow transition but things are speeding up now so watch out and be prepared for new and exciting things to come soon. (We REALLY thought it was 10 years ago but when I dug out the records…well,…….)

I believe the most significant factor is COST. Then and today still, it costs about $1000 to put a 10 milliwatt signal on the air. There are very few people willing to part with that much cash in order to do so. Even if we did, what could we do with the signal? Transmit it to whom? You would need to find a buddy with the same amount of spare cash. However, thanks to Ken, W8RUT who pushed the envelope and convinced the rest of the ATCO group that it was a worthwhile project.

OK, now here's something else that's just as remarkable! It's been **20 years since we initially installed our repeater in the SOT**. I missed the actual anniversary since it was installed in November 1993 but……it wasn't operational till January 1994 so it qualifies as the 20th anniversary. We REALLY need to party!!!!!!!!!!!!!!!! Cake, anyone????

I remember the "early days" when Fred Yost, K8JGY, was our treasurer and he organized our first informal club meeting. That first meeting was held at a restaurant (I thing Bob Evans) near his house way back in the early 1980's. Even before that Dale, WB8CJW and Ken, W8RUT, were playing around with a primitive repeater on the Hyatt hotel in downtown Columbus. I can't remember everything, especially dates, so a trip through past ATCO Newsletters was required to help clear the air. Here's what I found. Enjoy!

1981 – An informal meeting of a small group of Hams meet at a fast food restaurant to discuss forming an ATV club. WA8RUT suggested forming club called Amateur Television in Central Ohio.

June 1982 – ATCO group had third meeting at QTH of WA8RMC. 22 people attended. Discussed new repeater WB8LGA was building. Discussed creation of a Newsletter. Established a weekly net on 147.45 MHz. WB8LGA repeater intended to be installed on Labor Day 1982. 439.25 input / 425.25 output Located in Westerville proposed to be on a 106' tower, 875' ASL, 200' HAAT.
Sept 1982 – ATV repeater site selected. Found a 106 foot tower in northern Westerville.

July 1983 – WA8RUT (Now W8RUT) created a special edition Newsletter with many construction projects and design tips. Ken asked for help for BancOne marathon on October 16, 1983. Mobile stations transmit to repeater on building downtown Columbus.

October 1983 – 439.25 to 1278.75 crossband repeater on the air on the Hyatt-Regency Hotel. Receive antenna is WA8RMC stacked turnstile. Transmit antenna is 5-section vertical collinear for 23 cm. that WB8CJW built from the "1265 MHz omni gain repeater antenna by W6ORG. Coverage of BancOne marathon is a success. Art, WA8RMC, joins Newsletter staff for a total of two. Ken, WA8RUT is editor at this time. WB8LGA hosts first antenna party at his QTH. 14 people attended.

February 1984 – ATCO by-laws are created. Very little activity occurred between 1984 and 1987.

Summer 1985 – WB8LGA hosts another antenna party at his QTH.

January 1987 – Newsletter re-starts after many months as Volume 4 number 1. Warren Duemmel, KA8GZQ is new editor. There are now 19 members of ATCO. Bill, W8DMR, is technical editor.

September 1987 – Antenna party at WB8URI's (now W8URI) house in Plain City. 35 people attended. Approximately 30 antennas tested. W8DMR provides party leadership!

July 1988 - 3-D ATV - Three-D color ATV transmitted by Bill, W8FRQ, Received in 3-D by Wilbur, W8AEH, and Dave, KB2ARL. Accomplished by offsetting the RGB colors at the proper angle and viewing the video with 3-D glasses containing suitable filters.

October 1989 – Tech. editor W8DMR resigns. WB8LGA & WA8RUT given "Certificates of Appreciation" for ATCO involvement.

October 1990 – First formal Fall Event is held at the ABB shelter house on Ackerman road. 35 members attended. WA3DTO, Rick, provided all food and arranged the meeting.

April 1991 – ATCO now has over 40 members. Newsletter articles are needed. Few are contributing.

January 1993 – New treasurer and Newsletter editor named. Warren Duemmel resigned from acting treasurer/editor post for health reasons. Fred Yost (K8JGY) agreed to take over treasurer duties and WA8RMC will take over Newsletter publication. It's been about ten

years since the subject of an ATV repeater first surfaced and about six years since we had one. Even when the Columbus repeater **was** operational, it was a toy at best. Much pioneering was required and much was learned but the lack of a good antenna site and limited funds make true success very difficult. Investigated possibility of broadcasting the Weather Service radar real time video on an ATV frequency which has been met with a great deal of excitement on the part of the National Weather Service and the 2 meter Severe Weather Net. Weather Service gave their approval to use both their facility and video source as long as we use the video for non commercial purposes.

April 1993 – ATV repeater for Columbus is in the works. During a meeting at WA8RMC's QTH on January 17, 1993 the majority of us (16) decided that a new repeater was a very good idea. WB8URI was the only one initially opposed (But now feels he's OK with it).

A NEW CONSTITUTION AND BYLAWS FOR ATCO is formed**.** Because we are working on a repeater that will be placed on other owner's property, among other things, it has become time for us to incorporate as a non-profit organization. In order to do this, we must have a constitution and by-laws formally registered.

Repeater progress- Most important factor is **location.** A spot verbally promised on top of the State Office Tower Building. Rebroadcast of weather radar is a powerful asset to the severe weather net so they support our effort. We'll have to deal with RF floating around. Mainly for that reason a split site repeater is planned.

July 1993 – The new repeater site has not been formally approved yet. A decade ago, Central Ohio had two ATV Repeaters! One in-band (439.25/426.25) and one cross band (439.25/1278.25). The in-band 70cm machine was spearheaded by Charles, WB8LGA with WA8RMC and others assisting. The Cross Band machine efforts were provided by WB8CJW and WA8RUT. Both repeaters were single site, one (the in-band machine) located in North Westerville and the Cross Band machine located downtown Columbus. Both machines proved to be an experimenter's delight; both had lots of problems to be solved! Both machines eventually went off the air because of the time pressures of the people involved. We now have formal approval from the State to locate our repeater on the State Office Tower. Must meet with officials to iron out the formal details. I hope that by the time you read the next newsletter, an operating system will be in place.

October 1993 - We finally got formal approval to locate the repeater on the roof of the State Office Tower in downtown Columbus!!! WA8RMC finished construction of two dual slot antennas, one for 439.25 MHz receive and the other for 427.25 MHz transmit. Work continued on equipment for repeater.

November 1993 - ATV repeater finally installed on State Office Tower! Operation in beacon mode on 427.25 MHz is good but other modes need to be improved upon. The 1258.25 MHz transmitter is finished, installed and running. This signal follows the 427 signal so both are viewable at the same time. The main purpose for this is to provide a secondary signal viewable by the originator of the 439 signal to the repeater while he is sending it.

January 1994 – Repeater is put in operation on 427 transmit and 439 receive.

April 1994 - We felt that our existing get together once a year (Fall Event) was not enough. We are planning a "Spring Event" also. This seems like a good time being that it is after Dayton and into mild weather. Plans to install the repeater receiver and antenna on Channel 10's tower underway. We have permission to put the antenna at the 400 foot level. Since coax is already run, all we have to do is install the receive antenna and preamp and connect it to the existing Belden 9913. ATCO is now formally incorporated as non profit organization as "Amateur Television In Central Ohio Inc."

July 1994 - Fred Yost, K8JGY, moves to South Carolina. Bob Tournoux KF8QU has graciously agreed to take over this post. Columbus airport ATV radar link to repeater is now working.

January 1995 - The repeater is fully functional in the 439 to 427 repeat mode. It was a rocky road getting there but it's now reality. The 1280 input is another story. Also, the major rebuild talked about before is yet to happen. Most important item to get installed is the DS100 repeater controller. It is now fully functional scanning the inputs for a signal and sending out an ID on both the video and audio channels every 10 minutes. Ken just delivered our new rack cabinet for use when we rebuild the equipment.

April 1995 - The contact between K5YWL in Harrison AR just south of Springfield, MO. and K8AEH near Columbus, OH is over 628 miles. This is a new land path ATV DX record. This is also the first Arkansas to Ohio ATV path. CONGRATULATIONS, WILBUR!! A contact between WB0ZJP (west of St. Louis) and KA3FZF also broke the previous records of W0IMA in Moscow, IA and W3POS in Erie, PA and KB9FO, Des Plaines, IL and W2RPO east of Buffalo, NY. Also, the bulletin board feature we now enjoy every 30 minutes on the repeater was installed at this time.

July 1995 - John Chapman, WB8INY, (area Director for the ARES) contacted WA8RUT in mid-June to ask if ATCO would be interested in providing video surveillance of the Columbus Ohio 4th of July celebration called "Red, White & Boom" for the Columbus Police. After a discussion on the following Tuesday night net, WA8RUT called Sgt. Art Baker, the **E**mergency **O**peration **C**enter (EOC) coordinator and arranged for Art, WA8RMC and myself to visit Police Headquarters to review the request and plan. That was the first participation for the ATCO group to provide surveillance video for RWB. We have been doing it every year since then.

January 1996 – The 446.350 link transmitter is added to the repeater. An RF shielded enclosure added to 427 transmitter to help contain the sporadic RF generated by the Mirage D1010 amplifier.

July 1996 - Dale (WB8CJW) and WA8RMC went to the repeater and improved things quite a bit! Three major improvements were made.
1) We installed my dual 2 meter cavity. This removed the 146.76 MHz interference when trying to do touch-tone access on 147.45 MHz. Now access can be made when the 146.76 MHz repeater is on the air at the same time.
2) We installed hard line for the 439.25 MHz and the 446.35 MHz link transmitter runs within the cabinet. This eliminated the desense we were getting when the link transmitter was on while receiving a weak ATV signal on 439.25 MHz.
3) We retuned the 439.25 MHz receiver. This was necessary quite by accident because while we were installing the cables, we apparently bumped the 439.25 MHz receiver and the oscillator quit. By the time we found the problem, we had essentially retuned the whole receiver. **It needed it too.**

October 1996 – Replaced the 15 watt 1250MHz amplifier at the repeater with a 75 watt unit from DownEastMicrowave.

April 1997 – Bill Parker, W8DMR, introduces us to the Wavecom Tx and Rx modules for operation on 2.4GHz.

April 1998 – We tried to move repeater output to 421 to get away from receiver desense. The guys on 421 complained so we moved back to 427. We added more filters on Tx and Rx lines to correct the problem. A new 2.441GHz repeater output is added.

April 1999 - Channel 4 weather radar is added to the repeater functions. It is accessed via the 446.350MHz link by sending 264.

April 2000 – Dale replaces the VS100 video controller with one from Intuitive Circuits model ATVC-4.

October 2000 - Replaced the plastic radomes on 427 and 439 repeater slot antennas. They have been in place since 1993. (They need replacing again. Any volunteers??? The plastic vendor said it would last for at least 10 years. Looks like they were right!)

July 2001 – New repeater roof camera installed. This one lasted only a year. Bad design for the application.

January 2004 – The 10 GHz transmitter is installed at the repeater on December 18, 2003..

October 2004 – ATCO repeater club call of WR8ATV assigned to us by FCC. It was in error but we are allowed to keep it. Only about 150 such calls were assigned. No new "WR" calls will be assigned.

January 2005 – DATV transmitter installed at the repeater on January 9, 2005. We are the first in the USA to have a TV digital output on a repeater. It is operating on 1260 MHz with an output power of about 1 watt into a 12dBd omni vertically polarized antenna.

July 2005 – Spring event moves to a new location at the ABB cafeteria in Westerville. The ATCO-DARA link on Jones Road in South RVienna is up and running. Partial 2 way communication is accomplished.

July 2007 – Digital receiver now active for QPSK (DVB-S) on 1280 MHz.

October 2007 - September 26 through October 1, Rickenbacker Airport was the site of a very large air show. I believe the last one was in 1996 so it has been quite some time. This year proved to be much larger than the last one but some military planes were absent. That's too bad but the rest of the aircraft more than made up the difference. They estimated the people count to be in excess of 200,000 so it was reasonably well attended. ATCO provided crowd observation video surveillance. 1250 MHz power amplifier dies after 10 years of service. Temporary repairs made top put it back into service.

February 17, 2009 – Official shutdown date for commercial broadcast analog television.

October 2009 - New 427 MHz power amp installed at repeater. A Comark unit replaces the Mirage D1010 that was installed in 1993. Power output is about 90 watts. A terrific improvement.

January 2010 – We were informed by the FCC that we were again interfering with the ODOT GLONOS GPS transmissions. We moved the analog transmitter from 1250 to 1245 MHz and the digital transmitter on 1268 MHz. The 1280 MHz input for both analog and digital remains the same. Also, a new 1258 MHz analog transmitter goes on line. Its output is about 80 watts using an LDMOS transistor. This amp finally replaces the DEM 4 brick amp that had undergone many "blowout patch" applications.

January 2011 – 147.48 to 446.35 to 147.45 FM link to Jones Road is added. Dayton and vicinity can input on 147.45 and it repeats out in Columbus on 446.35. Those in Columbus inputs on 147.48 and it outputs on Jones Road on 147.45 for a duplex link. This is added mainly so Dick, W8RVH, can talk to the locals in Columbus. We added an LDMOS amplifier to repeater digital output. It now outputs about 20 watts.

January 2013 – New repeater roof camera is operational. Also, the 10GHz receiver is installed and operating.
…WA8RMC

ATCO FALL EVENT 2013

The Fall Event started around 1pm on November 3, 2013. No doubt due to the cool and cloudy weather, there was no tailgating in the parking lot as with past events. Attendees enjoyed a lunch of chicken, baked beans, cole slaw, potatoes, and cookies for dessert, along with cold beverages and coffee.

Art, WA8RMC, gave a welcome to all in attendance and started the introductions. In attendance:

Roger WB8DZW
Tom KA8ZNY
Mark N8COO
Joe KC8YPD
Ken W8RUT
John W3SST and son, David.
Bob N8OCQ
Terry W8ARE
Stanley AA8XA
Phil W8MA
Phil N8LRG and his XYL
Charles WB8LGA
Bob KD8ACU
Lester KC8EVR
Kevin W8KHW
John N1CTF
Art WA8RMC

Continuing on, Art discussed the new Homeland Security Radar located in London, OH, which is now in service and transmitting on or around 1280 MHz. This is the present input to the ATV repeater. In consultation with Kevin, W8KHW, who has a voice/digital repeater on 1285, it was decided to move the ATV repeater input to 1288 MHz and give it a try with respect to any potential interference to the 1285 repeater. Analog output will continue on 1258 and digital on 1268.

Next up was some discussion about new ATV repeaters in Ohio and vicinity. There is a new repeater near Bowling Green on an abandoned 250' cell tower using 439 in and 923 FM out. Charles WB8LGA mentioned they have got into this repeater but has no antenna for 923. There is also a new repeater in Lima using 439 in and output unknown to anyone in attendance. This one is using vertical polarization. Mention was also made of a new one East of Detroit (MI).

Art WA8RMC asked for help to work the club's video support of the Columbus Red, White and Boom event this year. He also asked for others to start taking the Tuesday Night net control to bring some variety and not having him monopolize the net.

Dale WB8CJW is working on the QAM transmitter for 70cm. It is proposed to put it on 423 MHz at 10 watts output. Charles WB8LGA discussed possibly turning the transmitter off so it's not on all the time as the other digital transmitters are running an ID. This is because Dayton uses 421 as well and the potential for interference. Ken W8RUT said that's it's not practical to turn the digital on and off every transmission. Charles asked that perhaps just the amplifier be turned on and off.

In summary, it was decided to move the input to 1288, transmit QAM on 421 on an experimental basis with the ability to turn it off if needed – hopefully, the difference in polarization (Dayton uses vertical, ATCO uses horizontal on 70cm) will help prevent interference.

Art asked if any new features were wanted on the repeater. There was also mention of having an antenna shootout or similar event. Kevin brought up about the interest of the Ohio State amateur radio club. Art asked Kevin if possible to make contact with them and discuss a joint event or other possibilities. Phil W8MA said his company is making a lot of boards for OSU so he'll see if any interest there with his contacts, as well.

Art asked if any interest in touring a local television facility. Many raised their hands. Also explored was looking for ideas of other activities – mentioned were a model aircraft club, SBE (Broadcast Engineers) conference and us possibly joining in. Art said he attended a conference before and enjoyed it.

The Event wrapped up with the usual Door Prize drawing – there were a nice variety of items ranging from power supplies to a video camera to components for the taking. As usual, I believe there was something for everyone.
…73, Mark N8COO ATCO Secretary

NTSC COLOR CELEBRATES 60TH ANNIVERSITY

The rocky road to a 'compatible' standard

by James E. O'Neal

(reproduced here by permission from TV Technology Magazine, Dec 18, 2013. www.tvtechnology.com)

WASHINGTON —Ever hear of the "color wars?" If not, read on. Though not covered in mainstream history books, these wars cost millions of dollars and untold thousands of man hours to prosecute before ending 60 years ago.

The formal close came on Dec. 17, 1953, a date little remembered, but one that is important as it marked the official end of a television industry conflict that simmered and boiled for half a decade. The skirmish involved two communications giants—the Radio Corporation of America (RCA) and the Columbia Broadcasting System (CBS)—and had roots extending back to March 1940 and a "chance" viewing of a motion picture by CBS's television engineering director, Peter Goldmark.

Goldmark and his new bride were honeymooning in Canada and had a substantial layover at the Montreal train station. While waiting, they decided to take in a new Hollywood release, "Gone With the Wind." Goldmark had never seen a Technicolor film and was totally smitten by what he saw—so much so that he decided to immediately move from black & white TV research into color once he returned from his trip. In a few months Goldmark was demonstrating color video to the FCC. Its chairman, James Fly, was impressed—so much so that the network gave Goldmark the green light to continue color R&D. However, America's entry into WWII eventually put the project on hold.

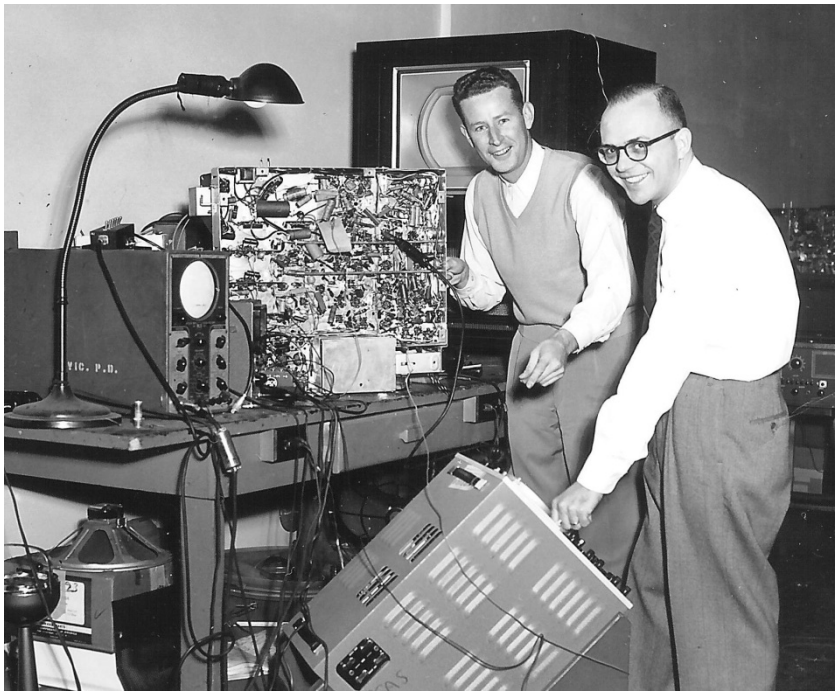
After global hostilities ceased, Goldmark returned to color work, and in doing so unintentionally ignited a skirmish that was to last almost as long as the war that halted his research.

THE BATTLE BEGINS

Goldmark was soon transmitting color signals throughout the New York City via the world's first UHF television transmitter and CBS made sure that the FCC and its new chair, Charles Denny, were aware of these over-the-air demos. (The CBS system provided high-quality color images.) According to Goldmark, the lobbying efforts seemed to be paying off, with Denny possibly even more impressed than his precursor. Goldmark and his bosses felt that the Commission would soon allow the network to move from experimental to commercial colorcasting.

RCA's chieftain, David Sarnoff, who had spent a lot of shareholder money in perfecting monochrome television was incensed that upstart CBS seemed to have beaten his company to the punch on color, and he was not about to let CBS walk just away with the prize.

Sarnoff accelerated RCA's own efforts to develop a color system—one without the major, but underplayed, flaw in Goldmark's system— it was not backwardly compatible with the very large number of black and white receivers already in consumers' homes; the CBS color line and field frequencies varied so greatly from the U.S 525/60 television standard that existing sets could not produce a picture when fed CBS color video.



Ray Bintliff (R) worked as an RCA field engineer at the company's color testing laboratory in Astoria, Queens, N.Y. He and other engineering personnel got their first exposure to compatible color via RCA's Model 5 developmental set. (The massive chassis and color CRT jig are seen on the workbench.)
(photo credit-Ray Bintliff)

The war began to heat up.

(Surprisingly, or maybe not, it wasn't too long after Goldmark charmed Denny with his color demos that the FCC chair relinquished his position to accept a high-level job at NBC.)

Goldmark kept tweaking his system, finally locking into a 405-line/144-field version that fit into existing six MHz channels. All the while RCA struggled to perfect "backwardly compatible" color, with their own approach for fitting three color images into a standard broadcast channel. However, RCA's early color demos didn't come off nearly as well as CBS's, and after some heated hearings the FCC decreed CBS the winner in the fall of 1950.

Sarnoff was now doubly incensed and took the matter to the courts, effectively freezing CBS's victory. (This delaying tactic also helped to make an even greater case against non-compatible CBS color video, as the meantime, the growing interest in television resulted in the manufacture and sale of even larger numbers of 525/60 black and white TV that wouldn't work with the CBS system.) The case eventually worked its way to the U.S. Supreme Court, which in May 1951 upheld the FCC's authority to set a color standard. CBS formally launched color broadcasts the next month, but soon realized that even though they'd won the battle, there were no spoils for the victor. Whenever CBS turned on the color, viewership plummeted to the vanishing point. This could have been predicted, as no established TV set builder could be persuaded to build sets for the CBS standard, requiring the network to go into the manufacturing business itself. (Only about 200 CBS color sets were ever produced.) After four months of sinking ratings, CBS tucked its multicolored tail and quietly slinked away from colorcasting.

PEACE AT LAST—THE BIRTH OF NTSC COLOR

Soon after CBS tossed in the towel, a second National Television System Committee was convened (the first had been formed in 1941 to hammer out monochrome standards) to develop a color system that wouldn't blindside black and white sets and one that all parties could agree upon. RCA was a major player, but a number of other television interests also formed the committee. (Even Goldmark joined.)

By mid-1953, the second NTSC's work was essentially complete; only a bit of fine tuning and FCC approval remained. Finally, late in the afternoon of Dec.17, the long awaited word came from Washington making it legal to transmit the NTSC color.

NBC initially used this colorized version of the network's "chimes" to announce color broadcasts; they were later replaced by the NBC peacock.

RCA/NBC immediately hoisted the victory flag by issuing a special "NBC Color Television News" press release, advising that the network had "raced off to a lighting start in color television by putting a color signal on the network at 5:32 p.m., EST, within minutes after announcement of approval of compatible color signal specifications for television by the Federal Communications Commission."

The release somehow managed to blindside all of the contributions made to the compatible color system by other players—notably Hazeltine Labs and Philco, bluntly declaring that "RCA developed the compatible color system."

CBS wasn't quite ready to completely throw in the towel, though. Across town from 30 Rock, Richard O'Brien, then a CBS Television project engineer and later the network's director of engineering, had also been waiting for the FCC announcement. He had at his disposal a small studio created for color program testing and decided to produce the world's first NTSC color television program. (NBC signaled the era of NTSC color with only the airing of a color slide)

"I was in our special color control room at Studio 71 in the CBS building when the announcement was made and thought it would be a good idea to put together a color show," said O'Brien. "I called a producer who had been working with us and he agreed. He got Dr. [Frank] Stanton, [prize fighter] Rocky Marciano who was there for a rehearsal, and Mike Wallace and we did a show. It lasted about half an hour." CBS at the time had been using the studio for rehearsing a pilot or developmental color program called the "New Review".

Speaking of the angst between CBS and RCA over developing color, O'Brien, now 97, stated "This formally ended it."

THE FIRST TRANSCONTINENTAL NTSC COLOR BROADCAST

RCA/NBC was not to be outdone, pulling its own color coup slightly more than two weeks later with the origination of the first coast-to-coast NTSC color broadcast—coverage of the Tournament of Roses Parade on Jan. 1, 1954.

By then at least 23 NBC affiliates were equipped to handle the new NTSC video and transmitted the parade in color.

Although NTSC broadcasts formally ended in June 2009 with the mandatory conversion to DTV by U.S. full-power stations, that color standard remains in use at some low-power stations, cable systems, and in several nations that have not switched off analog. Set-top boxes continue to produce NTSC signals for viewers who have yet to purchase digital sets. There are also the millions (perhaps billions) of NTSC-encoded recordings. It will be a long, long, time before NTSC color disappears completely. Happy 60th birthday!

The author wishes to thank Richard O'Brien, Ray Bintliff, Steve Dichter, Don Kent, and especially, Ed Reitan, for their assistance in putting together this article. Those interested in further pursuing the history of color television are invited to visit Mr. Reitan's website, http://www.edreitan.com *which provides much additional information on both the CBS and RCA color television systems.*

The Tale of 'Model 5'

Does a falling tree make a sound if there's no one in the forest to hear? Surely these words must have been in the minds of RCA engineers when the color program got into high gear. Even though standards had not been locked into place, color television receivers would be needed for testing and to be ready for demos when the FCC eventually signed off on NTSC. According to information provided by Ray Bintliff, who worked as a field engineer for RCA in 1953, RCA's Bloomington, Ind. plant began turning out limited quantities of a pre-production set, the "Model 5" that was designed for the color specs submitted to the FCC by the NTSC. These were sent to locations around New York City, including NBC executives' homes and the RCA color laboratory facility in Astoria, Queens where Bintliff worked. (The Queens lab was on the receiving end of the legendary "blue banana" joke perpetrated by RCA's Dr. George Brown.)

Bintliff estimated that perhaps 500 Model 5s were produced. In anticipation of what was likely to be a favorable FCC NTSC decision, early in December 1953 Model 5s began to be deployed in fair numbers to locations in cities with stations that could transmit the new color signal. The plan was to give the public its first real peak at compatible color with eye candy being the Tournament of Roses parade. Bintliff , now 91, recalls spending New Year's Eve at the New Haven, Conn. armory building adjusting the five model 5s sent there in order to be ready for the Jan. 1, 1954 event.

The model 5 evolved into RCA's first commercially marketed color set, the Merrill or "CT-100," which appeared at RCA dealers in late spring 1954. It carried a price tag of $1,000 (about $8,600 in today's money). Needless to say, few were sold.

This Model 5 is one of the few remaining and has been restored to operating condition. It now reposes in an Ohio museum. [near Roger in Hilliard] (photo credit-James E. O'Neal)

CONSTRUCTION ARTICLE INDEX

The following list is an index of all construction related material that has appeared in the ATCO Newsletter since its inception in the early '80's. This is a handy reference for that particular construction article that you knew existed but didn't want to wade through each issue to find it. All Newsletters below are also listed in order in the ATCO homepage under "Newsletters". CTRL Click on www.atco.tv. Once you locate the Newsletter section, the displayed list can then be re-sorted as needed by clicking on the "date" in the header.
…Bob N8OCQ

Issue	Page(s)	Article
Vol 1 II	5	439 Beam
Vol 2 I	4	439 Beam
Vol 2 II	8,9	439 Parabolic Ant
Vol 2 II	9	Video Modulator
Vol 2 III	7	1296 Ant 45 Ele loop yagi
Vol 2 III	10	RF Power Indicator (in-line) for 1296 MHZ
Vol 2 SE	2,3	Diode Multiplier for 23 CM
Vol 2 SE	4,5	1296 MHZ 10 Watt Solid State Linear Amp
Vol 4 I	3	RF/Video Line Sampler
Vol 4 II	3	P-Unit Meter
Vol 4 II	7,10,11	UHF Gated Noise Source
Vol 4 II	12	420 – 450 Broom Handle Rhombic Ant
Vol 4 III	4,8	25 Element 1.26 Loop Yagi
Vol 4 IIII	6	Video Modulator (Tube Type)
Vol 5 I	3	Video Modulator One Transistor
Vol 5 II	4,7	900 MHZ Yagi Ant
Vol 5 II	6	Video Modulator for 2C39 Final
Vol 5 III	3	440 MHZ Hidden Transmitter Finder
Vol 6 I	3	Video Line Amp
Vol 6 I	8	25 Ele 910 MHz Loop Yagi
Vol 6 II	4,6,7	Microwave Oven ATV Xmiter
Vol 6 II	5	Matching a Quad Driven Ele
Vol 6 II	8	Power Divider for 33CM
Vol 9 IIII	5,7	16 Ele Loop Yagi for 439.25 MHz
Vol 10		No Articles
Vol 11 II	4,5,6	439 48 Ele Collinear Ant
Vol 11 IIII	7	1280 MHZ Cavity Filter
Vol 12 I	6,7,8	439 & 1200 Horz Polarized Mobile Ant
Vol 12 II	5,6,7	ATV Line Sampler
Vol 12 II	10	439 & 1280 Interdigital Filter(s)
Vol 12 III	6,7,8	439 Cheap Attic Ant
Vol 13 I	9, 10	High Level Modulator for ATV
Vol 13 II	5	VGA to NTSC Converter for Computer
Vol 13 III	9, 10	AM Video Modulator
Vol 13 IIII	4	1200 MHZ Transistor Linear Amp
Vol 13 IIII	6	900 & 1200 MHz Loop Yagis
Vol 14 IIII	8	439 31 EleYagi
Vol 14 IIII	12, 13	1250 MHZ FM ATV 3 Watt Xmiter
Vol 15 I	16	427.25 Horz J-Pole Ant
Vol 15 II	14	2400 MHZ Loop Yagi
Vol 15 III	8	Wavecom Modification
Vol 15 III	12,13,14	2.4 Gig Antenna's
Vol 16 II	20	2.4 Gig Helix Ant
Vol 16 IIII	4	1280 MHZ Loop Yagi
Vol 17 I	14, 15	Video Amp (Multi Output)
Vol 18		No Articles
Vol 19 IIII	4	Pwr Supply for 28 Volt Ant Relay
Vol 20 III	9, 10	Video Sampler
Vol 21 II	4	RF Pwr Amp for 900/1200 MHZ
Vol 21 II	14	10-14 Volt Doubler for 28 Volt Ant Relays
Vol 21 III	5	S-Video To Composite Adaptor
Vol 21 IIII	3,4	Video Noise Rejection Amp
Vol 21 IIII	14,15,16 ,17	"S" Meter For Comtech Boards
Vol 22 I		No Articles
Vol 22 II	10	1260 MHZ Cavity Filter
Vol 22 III		No Articles
Vol 22 IIII		No Articles
Vol 23 I		No Articles
Vol 23 II	5,6	Linear 60 Watt For 70CM
Vol 23 II	8,9	Video Modulator Update
Vol 23 III		No Articles
Vol 23 IIII		No Articles
Vol 24 I	13	RF Sniffer For 2.4 GIG
Vol 24 II		No Articles
Vol 24 III	3	Quantum 1500 Rec Tuner Mod
Vol 24 IIII	9	Battery Recharge Ckt
Vol 25 I		No Articles
Vol 25 II	6,7	Comtech TX Module Improvement
Vol 25 III	11	Comtech TX Module Improvement Correction
Vol 26 I	6	Isolator (Circulator) Mod. 850 To 1260 MHz
Vol 26 II	5,6	Comtech 1200 MHz rec. module improvements
Vol 26 III		No Articles
Vol 26 IIII	9	Remote Touch Tone Decoder For Your Shack
Vol 27 I	10	ATV Low Pass Filter (427 Mhz)
Vol 27 II	15	PictureTel Camera Data Cable Wiring
Vol 27 II	10	ATV Low Pass Filter (427 Mhz)
Vol 27 II	15	PictureTel Camera Data Cable Wiring
Vol 27 III		No articles
Vol 27 IIII		No articles
Vol 28 I	11	Super 1280 MHz amplifier
Vol 28 II		No articles
Vol 28 III		No articles
Vol 28 IIII		WB8LGA Antenna switching system
Vol 29 I		No articles
Vol 29 II		1280 MHz Hi Gain Panel Antenna
Vol 29 III		No articles
Vol 29 IIII		No articles
Vol 30 I		No articles
Vol 30 II		No articles

This is the complete list for construction articles shown in past ATCO newsletters. The page numbers listed may not match the actual page in the Newsletter. They are the numbers shown in the PDF file. Some early issues are missing. Art did not have a copy of every year. This list is complete through Volume 30 IIII.
…Bob N8OCQ

NEW MEMBER(S)

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

WA8HNS, Mike Gray , Washington Court House, Ohio
…WA8RMC

LOCAL HAMFEST SCHEDULE

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

02/02/2014 | WinterHamFest
Location: Elyria, OH
Type: ARRL Hamfest
Sponsor: Northern Ohio Amateur Radio Society
Website: http://NOARS.net

01/26/2014 | Tusco ARC Hamfest
Location: Strasburg, OH
Type: ARRL Hamfest
Sponsor: Tusco Amateur Radio Club
Website: http://www.tuscoarc.org

02/02/2014 | WinterHamFest
Location: Elyria, OH
Type: ARRL Hamfest
Sponsor: Northern Ohio Amateur Radio Society
Website: http://NOARS.net

02/16/2014 | MID-WINTER HAMFEST & COMPUTER SHOW
Location: Mansfield, OH
Type: ARRL Hamfest
Sponsor: InterCity Amateur Radio Club
Website: http://W8WE.org

03/16/2014 | TMRA Hamfest & Computer Fair
Location: Perrysburg, OH
Type: ARRL Hamfest
Sponsor: Toledo Mobile Radio Association
Website: http://www.tmrahamradio.org

03/22/2014 | MOVARC's Hamfest
Location: Gallipolis, OH
Type: ARRL Hamfest
Sponsor: Mid-Ohio Valley Amateur Radio Club
Website: https://sites.google.com/site/midohiovalleyarc/

04/12/2014 | Cuyahoga Falls ARC's 60th Annual Hamfest
Location: Cuyahoga Falls, OH
Type: ARRL Hamfest
Sponsor: Cuyahoga Falls Amateur Radio Club
Website: http://www.cfarc.org/hamfest2014.php

04/26/2014 | Jackson County ARC Hamfest
Location: Jackson, OH
Type: ARRL Hamfest
Sponsor: Jackson County Amateur Radio Club
Website: http://jacksoncountyarc.org/page3.html

04/27/2014 | Athens Hamfest
Location: Athens, OH
Type: ARRL Hamfest
Sponsor: Athens County Amateur Radio Association
Website: http://ac-ara.org/

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

Domestic homepages

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

Foreign homepages

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

Misc other ATV related sites

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

TUESDAY NITE NET ON 147.48 MHz SIMPLEX

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

ATCO TREASURER'S REPORT - de N8NT

OPENING BALANCE (10/17/13)…….$2162.25
RECEIPTS(dues)…….$ 190.00
PayPal fees……$ (2.35)
Fall Event food…… $(187.54)
CLOSING BALANCE (01/20/14)…… $ 2162.36

ATCO REPEATER TECHNICAL DATA SUMMARY

Location: Downtown Columbus, Ohio
Coordinates: 82 degrees 59 minutes 53 seconds (longitude) 39 degrees 57 minutes 45 seconds (latitude)
Elevation: 630 feet above average street level (1460 feet above sea level)

TV Transmitters: 423 MHz QAM digital, 427.25 MHz VSB AM, 1258 MHz FM, 1268 MHz QPSK digital, 2433 MHz FM, 10.35 GHz FM (multipole filters in output lines of all transmitters)

Output Power - 423.00 MHz : 5 watts continuous (Digital QAM ATV on cable channel 57)
427.25 MHz: 50 watts average 100 watts sync tip (Analog ATV on cable channel 58)
1258 MHz: 40 watts continuous (Analog ATV)
1268 MHz 20 watts continuous DVB-S (QPSK) DATV SR=3.125Msps, FEC=3/4 , 2 video channels.
(PMT PID:32, Video PID:162, Teletext PID:304, PCR PID:133, Audio PID:88, Service ID:5004)
2433 MHz: 15 watts continuous
10.350 GHz: 1 watt continuous

Link transmitter - 446.350 MHz: 5 watts NBFM 5 kHz audio

Identification: 423, 427, 1258, 1268, 2433, 10.350 GHz transmitters video identify every 15 min. with ATCO & WR8ATV on 6 different screens.
1268 MHz digital & 10.350 GHz analog - Continuous transmission of ATCO & WR8ATV with no input signal present.

Transmit antennas: 427.25 MHz - Dual slot horizontally polarized "omni" 7 dBd gain major lobe east/west, 5dBd gain north/south
423.00 MHz – Diamond U200 vertically polarized 9dBd gain omni (digital QAM ATV)
1258 MHz - Diamond vertically polarized 12 dBd gain omni (Analog ATV)
1268 MHz - Diamond vertically polarized 12 dBd gain omni (Digital DVB-S ATV)
2433 MHz - Comet Model GP24 vertically polarized 12 dBd gain omni
10.350 GHz - Commercial 40 slot waveguide horizontally polarized 16 dBd gain omni

Receivers: 147.480 MHz - F1 audio input with touch tone control. (Input here = output on 446.350)
439.250 MHz - A5 NTSC video with FM subcarrier audio, lower sideband. (Input here = output on all TV transmitters)
449.975 MHz - F1 audio input aux touch tone control. 131.8 Hz PL tone. (Input here = output on 446.350).
1288.00 MHz - F5 video analog NTSC. (Input here = output on all TV transmitters)
1288.00 MHz - DVB-S (QPSK) digital SR=4.167Msps, FEC=7/8, PCR PID:33, Video PID:33, Audio PID:49
This input feeds all transmitters and also directly to 1268 MHz digital output channel 2. Therefore, 1280 DATV input and 439 or 2398 can be ON at the same time. (Input here = output on all TV transmitters)
2398.00 MHz - F5 video analog NTSC. (Input here = output on all TV transmitters)
10.450 GHz - F5 video analog NTSC

Receive antennas: 147.480 MHz - Vert. polar. Diamond 6dBd dual band (also used for 446.350 MHz link output)
439.250 MHz - Horizontally polarized dual slot 7 dBd gain major lobe west
1288.00 MHz - Diamond vertically polarized 12 dBd gain omni
2398.00 MHz - Comet Model GP24 vertically polarized 12 dBd gain omni
10.450 GHz - Commercial 40 slot waveguide horizontally polarized 16 dBd gain omni

Auto mode Input control:

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

Manual mode Functions:

00* then 1 for Ch. 1	Select 439.25 receiver
00* then 2 for Ch. 2	Select 1280 digital receiver
00* then 3 for Ch. 3	Select 1280 analog receiver
00* then 4 for Ch. 4	Select 2398 receiver
00* then 5 for Ch. 5	Select video ID (6 identification screens)
01* or 01#	Channel 1 439.25 MHz scan enable (hit 01* to scan this channel & 01# to disable it)
02* or 02#	Channel 2 1280 MHz digital receiver scan enable
03* or 03#	Channel 3 1280 MHz analog receiver scan enable
04* or 04#	Channel 4 2398 MHz scan enable
A1* or A1#	Manual mode select of 439.25 receiver audio
A2* or A2#	Manual mode select of 1280 digital receiver audio
A3* or A3#	Manual mode select of 1280 analog receiver audio
A4* or A4#	Manual mode select of 2398 receiver audio
C0* or C0#	Beacon mode – transmit ID for twenty seconds every ten minutes
C1* or C1#	C1* to disable 427 MHz transmitter, C1# to enable it
C2* or C2#	C2* to disable 1268 MHz digital transmitter, C2# to enable it

ATCO MEMBERS as of January 2014

Call	Name	Address	City	St	Zip	Phone
KD8ACU	Robert Vieth	3180 North Star Rd	Upper Arlington	OH	43221	614-457-9511
KC3AM	Dave Stepnowski	735 W Birchtree Ln	Claymont	DE	19703	
AH2AR	Dave Pelaez	1348 Leaf Tree Lane	Vandalia	OH	45377	
W8ARE	Larry Meredith III	6070 Langton Circle	Westerville	OH	43082-8964	
KC8ASF	Tom Pallone	3437 Dresden St.	Columbus	OH	43224	614-268-4873
NN8B	Don Kemp	6384 Camp Blvd.	Hanoverton	OH	44423	
W6CDR	Wynn Rollert	1141 Pursell Ave	Dayton	OH	45420	937-256-1772
WB8CJW	Dale Elshoff	8904 Winoak Pl	Powell	OH	43065	614-210-0551
N8COO	C Mark Cring	2844 Sussex Place Dr.	Grove City	OH	43123	614-836-2521
WB8CXO	Mike Young	289 Gayloard Dr	Munroe Falls	OH	44262	
N8CZO	Mike Flaharty	1025 Josiah Morris Road	London	OH	43140	
N3DC	William Thompson	6327 Kilmer St	Cheverly	MD	20785	301-772-7382
WA8DNI	John Busic	2700 Bixby Road	Groveport	OH	43125	614-491-8198
K8DMR	Ron Fredricks	8900 Stonepoint Ct	Jennison	MI	49428-8641	
K8DW	Dave Wagner	2045 Maginnis Rd	Oregon	OH	42616	419-691-1625
WB8DZW	Roger McEldowney	5420 Madison St	Hilliard	OH	43026	614-405-1710
KC8EVR	Lester Broadie	108 N Burgess	Columbus	OH	43204	
WA8FLY	Rod Shaner	16012 London Rd.	Orient	OH	43146	740-279-3614
N8FRT	Tom Flanagan	6156 Jolliff St.	Galloway	OH	43119	
W8FTX	George Biundo	3675 Inverary Drive	Columbus	OH	43228	614-274-7261
WB2FVE	Craig Blaine	1195 Hooverview Drive	Westerville	OH	43082	614-891-5378
W8FZ	Fred Stutske	8737 Ashford Lane	Pickerington	OH	43147	
KB8GHW	Mike Amirault	5560 Refugee Rd.	Baltimore	OH	43105	614-859-7005
WA8HFK,KC8HIP	Frank & Pat Amore	3630 Dayspring Dr	Hilliard	OH	43026	614-777-4621
WA8HNS	Mike Gray	5029 St Rt 41 NW	Washington Ct Hs	OH	43160-8740	740-335-5133
W4HTB	Henry Cantrell	905 Wrenwood Dr.	Bowling Green	KY	42103	270-781-9624
WG8I	Chris Vojsak Sr,	3536 W Henderson Rd	Columbus	OH	43220-2232	614-203-6000
WB2IIR	Michael Anthony	370 Georgia Drive	Brick	NJ	08723	
N8IJ	Dick Knowles	1799 Homeward Ave	Lima	OH	45805	419-231-7277
W8KHP	Allan Vinegar	2043 Treetop Lane	Hebron	Ky	41048	
WA8KQQ	Dale Waymire	225 Riffle Ave	Greenville	OH	45331	937-548-2492
N8LRG	Phillip Humphries	30856 Coshocton Road	Walhonding	OH	43843	614-3543744
WB8LGA	Charles Beener	2540 State Route 61	Marengo	OH	43334	
KA8LWR	Mel Alberty	1645 Olentangy Road	Bucyrus	OH	44820	419-468-2971
KD8KDM	Mike Bowlus	127 W. Plum St. PO box 221	Saint Paris	OH	43072	
W8MA	Phil Morrison	154 Llewellyn Ave	Westerville	OH	43081	
KA8MFD	Ross McCoy	227 S Boundary St PO Box 9	Edison	OH	43320	
KA8MID	Bill Dean	2630 Green Ridge Rd	Peebles	OH	45660	
N8NT	Bob Tournoux	3569 Oarlock Ct	Hilliard	OH	43026	614-876-2127
WU8O	Tom Walter	15704 St Rt 161 West	Plain City	OH	43064	614-733-0722
N0OBG	Jim Conley	33 Meadowbrook C C Est	Ballwin	MO	63011	
N8OCQ	Bob Hodge Sr.	3750 Dort Place	Columbus	OH	43227-2022	
W6ORG,WB6YSS	Tom, Maryann O'Hara	2522 Paxson Lane	Arcadia	CA	91007-8537	626-447-4565
KE8PN	James Easley	1507 Michigan Ave	Columbus	OH	43201	614-421-1492
WA8RMC	Art Towslee	438 Maplebrooke Dr W	Westerville	OH	43082	614-891-9273
W8RRF	Paul Zangmeister	10365 Salem Church Rd	Canal Winchester	OH	43110	
W8RRJ,W8WTB	John Hull	580 E. Walnut St.	Westerville	OH	43081	614-882-6527
W8RUT,N8KCB	Ken & Chris Morris	2895 Sunbury Rd	Galina	OH	43021	
W8RVH	Richard Goode	9 Master Street Apt A	Springfield	OH	45504	937-478-6488
W8RQI	Ray Zeh	2263 Heysler Rd	Toledo	OH	43617	
KB8RVI	David Jenkins	1941 Red Forest Lane	Galloway	OH	43119	614-853-0679
W8RWR	Bob Rector	135 S. Algonquin Ave	Columbus	OH	43204-1904	614-276-1689
W8RXX,KA8IWB	John & Laura Perone	3477 Africa Road	Galena	OH	43021	614-579-0522
WA6RZW	Ed Mersich	34401 Columbine Trl West	Elizabeth	CO	80107	
W8SJV, KA8LTG	John & Linda Beal	5001 State Rt. 37 East	Delaware	OH	43015	740-369-5856
KB8SSH	Mike Cotts	3424 Homecroft Dr	Columbus	OH	43224	614-371-7380
W3SST	John Shaffer	6706 Gilette Dr	Reynoldsburg	OH	43068	614-751-0029
WA6SVT	Mike Collis	PO Box 1594	Crestline	CA	92325	
W8TIP	Gene Hawkins	1720 Liberty Street	Toledo	OH	43605	
KD8TIZ	Bob Holden	5161 Goose Lane Rd	Alexandria	OH	43001-9730	614-562-8441
K8TPY, K8FRB	Jeff & Dianna Patton	3886 Agler Road	Columbus	OH	43219	
NR8TV	Dave Kibler	243 Dwyer Rd	Greenfield	OH	45123	937-981-1392
W8URI	William Heiden	5898 Township Rd #103	Mount Gilead	OH	43338	419-947-1121
KB8UWI	Milton McFarland	115 N. Walnut St.	New Castle	PA	16101	
WA8UZP	James R. Reed	818 Northwest Blvd	Columbus	OH	43212	614-297-1328
KB8WBK	David Hunter	45 Sheppard Dr	Pataskala	OH	43062	740-927-3883
KC8WRI	Tom Bloomer	PO Box 595	Grove City	OH	43123	
AA8XA	Stan Diggs	2825 Southridge Dr	Columbus	OH	43224-3011	
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
W8ZCF	Ferrel Winder	6686 Hitching Post Ln.	Cincinnati	OH	45230	
K3ZKO	Ron Cohen	915 Rowland Ave	Cheltenham	PA	19012	215-828-1263
N8ZM	Tom Holmes	1055 Wilderness Bluff	Tipp City	OH	45371	
KA8ZNY,N8OOY	Tom & Cheryl Taft	386 Cherry Street	Groveport	OH	43125	614-202-9042

ATCO MEMBERSHIP INFORMATION

Membership in ATCO (Amateur Television in Central Ohio) is open to any licensed radio amateur who has an interest in amateur television. The annual dues are $10 per person payable on January 1 of each year. Additional members within an immediate family and at the same address are included at no extra cost.

ATCO publishes this Newsletter quarterly in January, April, July, and October. It is sent to each member without additional cost. All Newsletters are sent via Email unless the member does not have an internet connection.

The membership period is from January 1ST to December 31ST. New members joining before August will receive all ATCO Newsletters published during the current year prior to the date they join ATCO. For example, a new member joining in June will receive the January and April issues in addition to the July and October issues. For those joining after August 1ST, they can elect to receive a complementary October issue with the membership commencing the following year or get the previous (3) Newsletters. Your support of ATCO is welcomed and encouraged.

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

NOTE: Dues records on your individual portion of the ATCO website are listed as the date money is received and shows due one year from that date. The actual expiration is on January of the following year so we can keep the dues clock consistent with the beginning of each year.

ATCO CLUB OFFICERS

President: Art Towslee WA8RMC
V. President: Ken Morris W8RUT
Treasurer: Bob Tournoux N8NT
Secretary: Mark Cring N8COO
Corporate trustees: Same as officers

Repeater trustees: Art Towslee WA8RMC
Ken Morris W8RUT
Dale Elshoff WB8CJW
Statutory agent: Tom Bloomer KC8WRI
Newsletter editor: Art Towslee WA8RMC

ATCO MEMBERSHIP APPLICATION

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

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

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

FIRST CLASS MAIL

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