ATCO NEWSLETTER

VOLUME 36 NUMBER 4 **October 2019**

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

ATCO SPOTLIGHT TOPIC

Thanks to Beasley, K6BJH (SK) for allowing us to share his cartoons.

I DID NOT TRY TO STEAL YOUR OLD TV CAMERA---
IT FOLLOWED ME OUT ON ITS OWN!

ACTIVITIES ... from my Workbench

Well, here we go again. I've said it before but now it's the time of the year to start complaining about upcoming winter weather. Too bad, for my antenna work that I've been looking at with a beer in my hand all summer still isn't complete (or started). Oh well, there's always next year.

That said, it's time to review the things I've actually **done** this summer and not just the projects I've only thought about but did nothing physical. Sound familiar??? OK, join the club!

Some work was done on the repeater 23cm transmit and receive filters. They haven't been touched for about 10 years now so a check was in order. To my surprise they were OK for the most part. The bandpass was the same but I was able to fiddle with them to obtain a little less throughput loss. I think they had about 2dB loss initially. When I finished, they were about 1.5dB loss. Not a lot of improvement but I'll take all I can get.

The 70cm cavities were marginally OK but needed improvement to help reject the FM signals above 439MHz. Since we are using the same filters for both the 439.25 analog and the 439.00 MHz DVB-T inputs, some compromise must be made. Remember the analog is vestigial lower sideband, so the 439.25 bandpass is set for about - 4MHz +1/2MHz. and the digital is 439.00 ± 1MHz. If I open up the bandpass to allow full digital bandpass, it allows some interference from other FM repeaters starting at about 441MHz so there is "**no free lunch** " here. I found that by making the upper bandpass slope steeper and starting the roll off a little sooner at about 439.50, I didn't harm either signal and improved the attenuation of frequencies at 441MHz and above. So far, so good. The filter output now goes to a high IP3 20dB gain preamp I added then to the signal splitter. The splitter output from one side goes to the digital receiver and the other side to the analog receiver. Since the analog receiver can't handle the high signal from the preamp, I added a 10dB attenuator to that line. The overall result is that both receivers now perform better than before.

Now that the 439MHz input is more sensitive, I discovered interference blocking reception from each evening to the next morning every day. REAL STRANGE!!!! It is a digital TV type signal about 1MHz wide with steep skirts on each side. It comes on about 7PM and starts at 438MHz drifting to about 440MHz ½ hour later. It's a horizontally polarized signal with a received signal strength of about -25dBM. **That's huge!** I traced it to a building directly across the street from the repeater location and found it is a government owned building containing the offices of the Governor of Ohio. Needless to say, I was denied entrance to that building. I was told "There is no interference in that building…go look somewhere else!" So, I had no alternative other than calling the FCC and letting them handle it so I now have a registered ticket with the FCC to investigate. This may take a while but my hands are tied pursuing the matter myself. The signal seems like it may be a security camera of some sort but because of the strong signal and horizontal polarity plus the fact that it is not detected at ground level, (only at 20 floors up to about 40 floors) I'm assuming it's an intentional signal pointed at our repeater for whatever reason. I am told by the FCC it may be months before they are able to be on site to track it. Till then, we are essentially off the air on the 70cm 439 input.

That's all for now. More later, Stay tuned! Don't forget the Spring Event on Sunday October 27.
...73 WA8RMC

ATV NEWS FROM OTHER CLUBS

Dale in Greenfield, Ohio (West of Dayton)

8/20/19. Watched your net tonight on BATC - tried to check in but no matter how I typed it, no go - I don't pay to join nets - I have tried listening for the net on 147.48 but no luck - can't understand that one either - I check into a net on Monday night in Wisconsin on 432.110 USB with 25W and another net on 144.240 USB 70W on Wednesday nights - evidently FM isn't the greatest thing since sliced bread - been building antennas and about to change a couple - making 432 Yagi's - ring Yagi's - 42 element ring Yagi for 1.2Gig - designed a 16 over 16 skeleton slot that on an 8 foot test stand in the back yard between the back porch and the workshop with a humongous apple tree 20 feet in front of it puts a 40 over signal over 20 miles South of me on 432 - at this time during the test feeding it with mini 8 - also playing with Moxson's on VHF & UHF - surprising how well they work - enjoy your Newsletters very much - I walk a lot - 10 to 15 miles 3 times a week - be 83 in December - like to make it to one of the gatherings sometime - best 73.
…Dale WA8KQQ

Bryan in Pleasant Lake, Michigan

8/31/19. I just wanted to let you know that I have been seeing the Columbus ID 427.25 running since about 11:30 last night. It has been up to p2 levels. Currently at p1 to p0. I thought it came up only every half hour but has it been switched to run 24/7 now? I saw on Facebook the tower is getting major work done and wondered if it was still on the air. In one pic, someone posted it looked the round mounting structure was removed. Looks like they are working on the sides of the building as well. I am still active up here but working 2 jobs and things have been busy with upgrades. I am on 144.340 and try to get on in the mornings when I can. I work Ron K8DMR when conditions allow. I still have the digital equipment but working on outfitting a different vehicle for gear and it's been a slow process. Our machine up here is still on and has dual 439.000 d2/439.25 lvsb receive capabilities. There is no local activity. I tried to give gear away to gain interest but no one seems to want to mess with it. I need to see if I can squeeze another beam antenna up there to link to Ron full time maybe, would like one toward you guys too but it's getting fairly crowded and the building owner watches things pretty close. Hope to stay in touch.
… Bryan Dygert KC8LMI

Mario in Oceanside, CA [DM13]

Greetings to all: Just an example on how our digital video logic gateway looks on our matrix digital repeater controller, it handles the video input feeds as they are received. it automatically adjusts for video and audio quality before being transmitted out on either DVB-T or DVB-S2 or both. Also since the controller has both blue tooth and Wi-Fi on board we are testing to incorporate "Alexa" as a control AI with a app that ***Ravi*** {team member & Ham} has developed on his own and tested on the bench to spec. out repeater status and control. So, the Repeater(s) controllers are still being tested, developed, upgraded as we use it on a weekly basis. We did have the Colorado {Jim's Repeater} on this past Thursday, link up went well as can be with programmed automatic time slot execution for a 65-minute window to work in ID and overlap. A program algorithm starts the login process using my login credentials to start the process to bring the link in from its source point. The third {backup}controller is almost finished. We have had a great time going portable over the weekend's as most have work schedules also during that time. So far, we have had no issues with frequencies used for our evaluation program both on transmit and receive on DVB-T and DVB-S2 {no analog being used}. Our patient has gone through for the controller. That's' my update report for now. 73 our best wishes to all and we will see you all on Amateur Radio TV.
…Mario, KD6ILO

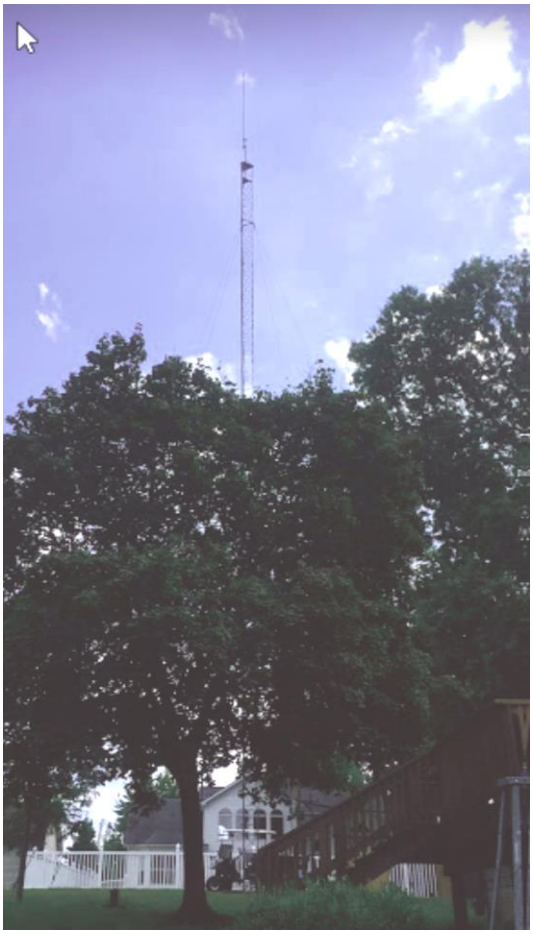
Mario also reports,
To all, greetings on this Labor Day weekend. Since like many whom are employed or busy with other matters of importance as Amateur Radio TV users and operators we do not always have time to participate or watch programs or events being transmitted on our systems. As one of three (3) Sys Op's and program manager for our repeater system we like to share programs, events and technical nets with our group. Especially when we miss a great net with awesome participation. We do up-link other ATV networks from the U.S.A and from abroad, one of our favorites is the weekend technical net on GB3SQ, with host Colin [G4KLB]. We did link up and had a full-duplex participation with most of the BATC membership on the net, we were lucky as the audio and video link up was working in our favor this past Saturday. W8BI ATV repeater club had a great program hosted my Dave, AH2AR and Reuben, W8GUC. In the past, I'd also link up by audio via "Echolink" using my simplex node on 2m [KD6ILO-L] Used also with WW7ATS and W6CX. Since our digital repeater matrix controller has a built in DVR we re-transmitted David's presentation program on our system in 1080p HD on 23cm test frequency {DVB-S2} and what a great video from W8BI via IP to repeater. We had a great time with our group today at our homes watching Amateur TV. We are also bringing in K6BEN in San Jose. Ben has been told of our plans and he said, quote; "Ok Mario, thanks a lot that it'll be nice so others can watch". As technology improves in this mode of operation, our systems can be upgraded and continue to support DATV. I've attach a short video and picture from our monitor on site. 73 to all and have a very safe and pleasant week ahead. I'm going on a small break.
…Mario, KD6ILO

Jim in Boulder, Co Amateur Television Club new tv repeater
The big news is our club has a NEW W0BTV TV repeater. Jim and Don have spent the summer, redesigning and rebuilding our old TV repeater. It retains the basic features from before, but with refinements and is more user friendly. It still is capable of receiving either analog or digital TV signals on either 70cm or 23cm bands. It is also capable of transmitting either analog or digital TV signals on 70cm band. For receive, it will accept 23cm DVB-T, 70cm DVB-T, 23cm FM-TV, or 70cm VUSB-TV. On transmit, it will output on Ch. 57 (420-426MHz), either DVB-T (423MHz) or VUSB-TV (421.25MHz). On 70cm, it receives on Ch 60 (438- 444MHz). On 23cm, it receives DVB-T on 1243MHz and FM-TV on 1247MHz.

The previous repeater was built by Jim & Don in 2016. What made the new design possible was finding this past spring a much-improved HDMI switch. The old, 2016 design used what was available then, but that HDMI 4 in / 1 out switch could not be computer controlled. Thus, the repeater design was very complex and unwieldy. We had to have a lot of "work-arounds" to TV Rptrs. Rptr-18.doc (kh6htv, 8/25/2019) p. 2 of 8 even make it work remotely. We suffered from intolerably long delay times when we switched receive bands/modes or lost an incoming TV signal. The new HDMI switch is basically a Quad Viewer, but with the added feature of a RS-232 computer control port. After Don was able to figure out how to use an Arduino micro-computer to control the Quad Viewer via RS-232 -- it became very obvious that we should thus redesign and rebuild our TV repeater. Jim, KH6HTV, did the hardware rebuild. Don, N0YE, wrote the new computer code for the Arduino controller.

The W0BTV, TV repeater was first made operational for the BATC club members on the August 22nd, Thursday afternoon ATV net. It was operating from a temporary location at Jim's QTH, south-east of Boulder. Jim has the same antennas on his tower as are used at our TV repeater site on the mesa south-west of Boulder. For receive, a Diamond X-6000 (2m/70cm/23cm) omni antenna is used. For transmit, a DB Products DB-411, 70cm, 4 element co-linear antenna is used.
…Jim Andrews, KH6HTV

Mel in St. Louis, Mo K0PFX, reports - Here, I now have the repeater on one antenna 10 foot higher (a Hustler/Spirit 9db) with DCI, 8 pole bandpass filters. I am looking to buy or build a higher power amplifier. Our club SLATS (St Louis Amateur Television Society) received a new state coordinator's data base.



The original DVB-T repeater was a split antenna with a Hustler G6 at 65 ft. for transmit and a G-6 receive antenna on top of the 80 ft. tower. Rx had 1/2 inch supper flex feed line and Tx had 7/8" Heliax. Some of the members had difficulty accessing or seeing the repeater. Mel and some of the other members pooled their funds for a major rebuild. Earle WD0FCH (QTH where the repeater is located in Maryland heights west of St. Louis purchased a new tower section. The group contracted with a tower company to remove both antennas and feed lines. Temporary top guys were installed at 68 feet and the old guys removed from the 80 ft. level. The tower top section was removed and the new Rohn 45 tower section installed and guy wires connected at 78 feet. The top tower section was re-installed. Tower is now at 90 ft.

A new antenna, a Hustler Spirit series 9 dBd antenna installed on a 5 ft. mast above the tower. New 7/8" Heliax was installed as well as some personal antennas lower on the tower for Earle. In the shack two DCI filters set up as a duplexer was installed. The coverage has improved and VSWR is nearly flat. The antennas was custom ordered at 434 MHz center channel and has 25 MHz bandwidth to cover the 426 MHz output and 441 MHz input (2 MHz bandwidth). Duplexer losses are about 1.6 dB both channels and greater than 90 dB TX-RX isolation.

I had a good turnout for my DATV presentation at the ARRL/TAPR Digital Communications Conference (DCC) held in Detroit last week. The 40th Anniversary of this conference will be in Tucson Oct 2022. My talk at DCC was more of an introductory talk with info on building an interface and repeater. Much of it was from previous talks but I find the "locals" wherever I go are looking for this kind of info vs. "how it works tech details." I had three handouts. One was a one sheet DVB-T tutorial, another on the many acronyms and references. Phil Karn KA9Q attended and supported me with a few comments.

By the way, most of the players from ARDC were there. ARDC received **52 million dollars** for some 44.x IP addresses "hams had" and Amazon was glad to get them. It was a good time to sell as they will be near worthless when IP6 is finally implemented. As a result, we'll see those dollars put to good use for ham radio. They sponsored a number of students to attend the DCC and most of them were at my talk. So, good to see something besides gray beards in the audience.

Mike Collis WA6SVT in Crestline, Ca. Reports that they had a great barbeque at Tom Bord, WB6HYH, house Saturday August 10. No more details but they sent this picture of the group that attended.

HAMVENTION UPDATE

From the ARRL Letter for September 12, 2019

Dayton Hamvention Signs 5-Year Contract with Greene County Expo Center

The Dayton Amateur Radio Association (DARA) has signed a 5-year agreement to keep Dayton Hamvention® at the Greene County Expo Center. The agreement was announced on September 9 by Hamvention General Chairman Jack Gerbs, WB8SCT.

"It has been a wonderful experience working with the Expo Center team in the development of this agreement," Gerbs said. "With the 5-year agreement signed, the Expo Center and Hamvention can move forward with additional enhancements to the facilities."

Dayton Amateur Radio Association President Ron Cramer, KD8ENJ, said the DARA Board, in approving the contract, noted that the relationship with the Expo Center and Greene County, the City of Xenia, and Xenia Township "has proven especially rewarding." Cramer said, "They all have worked hard to make Hamvention a success over the last 3 years. We look forward to a great relationship over the next 5 years and beyond." Hamvention's 2019 attendance was 32,472 -- the highest recorded since the move to the Exposition Center in Xenia in 2017, which was coordinated by Cramer, the Hamvention General Chairman in 2017 and 2018.

The largest Amateur Radio show in the US, Dayton Hamvention is held the third full weekend in May. The dates for 2020 are May 15 - 17.

IS DVB-T SIDEBAND SENSITIVE?

From Jim Andrews, KH6HTV application note AN-50 copyright Sept 2019

Application Note, AN-36, in 2017, has previously discussed the basics of what is required to operate at microwave frequencies with DVB-T. We can purchase from Hi-Des in Taiwan, both modulators and receivers that will work up to the 13cm (2.4 GHz) band. Above there in frequency, we need to then start using mixers and local oscillators to up/down convert. So, one question arises right away -- *"What happens when sidebands are inverted ?"*

When using a mixer & LO, the resultant output contains 2 mixing product signals, $f_{usb} = f_{lo} + f_{if}$ and also $f_{lsb} = f_{lo} - f_{if}$ the polarity of the RF sidebands remains the same as the IF for the plus (+) mixer product. But the polarity of the sidebands is reversed for the minus mixer product. When using single sideband voice this makes a big difference. Inverting the sidebands results in un-intelligible speech. What does it do to a DVB-T digital TV signal???

The quick answer is NOTHING! It still works.

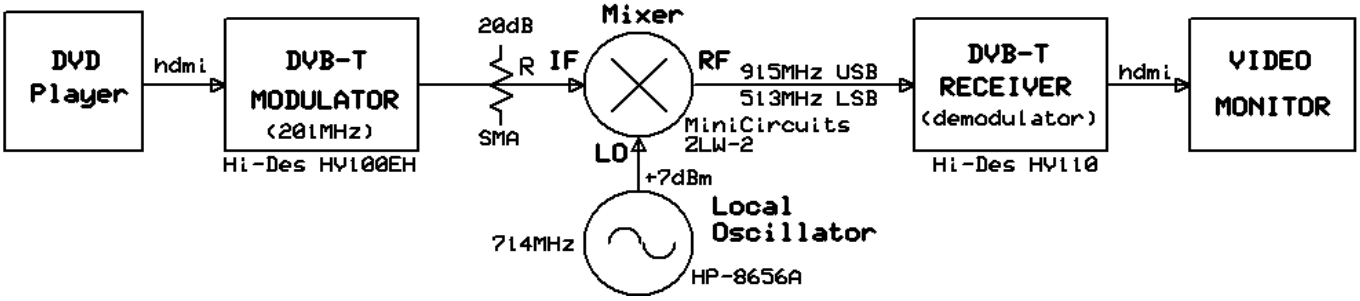


Fig. 1 Test set for mixer/LO tests of DVB-T

To experimentally determine this, I set up a controlled experiment. See above Fig. 1. I started with a DVB-T receiver which had already been trained to receive normally 915MHz on 33 cm band. I also then trained the receiver to receive normally on 513MHz. I then reprogrammed the HV-100 modulator to put out a normal DVB-T signal on Ch 11 (201 MHz). With a local oscillator set to 714 MHz, the USB product was 915 MHz, TV Rptrs Rptr-20.doc (kh6htv, 9/21/2019) while the LSB product (with inverted DVB-T signal) was on 513MHz. Connecting the HV-110 receiver to the mixer output, I was able to successfully receive both the 915 and 513MHz signals. This proved that inverting the sideband polarity of the DVB-T signal had no effect.

Frequency Offset: With this LO/mixer test set, it was then a simple matter to determine the sensitivity of a DVB-T receiver to having a signal with the center frequency offset from the correct frequency. Adjusting the LO frequency of the HP signal generator, I found that I could move the LO up or down about ± 550 kHz and the receiver would retain lock. Thus, a DVB-T signal with Doppler shift up to this amount should still work.

Phase Noise: The next test was also simple to perform. What happens with phase noise? I was able to simulate this by turning on the FM modulation of the HP signal generator. What I found was the DVB-T receiver was very sensitive to small amounts of FM deviation of the center frequency. With a 1 kHz test tone, the receiver worked only up to about 600 Hz deviation. With a lower 400 Hz test tone, it was worse. 200 Hz deviation caused pixelization and anything higher, the receiver failed. The following table shows the degradation of a DVB-T signal's signal to noise ratio (S/N) with increasing FM deviation with a 1 kHz test tone. (the test DVB-T signal was QPSK, 1080P, 6Mbps, 1/2 FEC, 1/16 guard). Bottom Line -- DVB-T cannot tolerate much FM or phase noise.

Deviation	S/N	Deviation	S/N
None	23 dB	400 Hz	11 dB
100 Hz	23 dB	500 Hz	9 dB
200 Hz	20 dB	600 Hz	8 dB
300 Hz	14 dB	700 Hz	0 dB (i.e. no picture)

…Jim Andrews

DARA / ATCO JONES ROAD ACTIVITY

Art WA8RMC and I went out to Jones Rd Saturday 10/5/19 to test the link paths one more time to plan for linking the ATCO and W8BI ATV repeaters. The Saturday link test went exceedingly well. There will be more information forthcoming as the plan for this link gets closer to becoming a reality. In order to get ready for this linking interface, I will be making a simple modification/addition to the W8BI ATV repeater in order to prepare for the work needed at Jones Road. This will be transparent to the current operation of the W8BI ATV repeater.

Before the below explanation is given, note that we already have a 1280 MHz DVB-T HV122 receiver at the DARA site that will be relaying ATCO activity being relayed from the Jones Rd site. Also note that ATCO in turn will be able to see the DARA repeater output through a different leg of the Jones Rd Link. Art is currently exploring available options for the ATCO leg at Jones Rd.

So here is what we are going to do at the W8BI ATV repeater site: We will have a dedicated voter port #4 available on the Intuitive Circuits controller and this is where the HV122 1280 MHz receiver's NTSC video will always be present. Under normal conditions, this voter port will be switched out. HOWEVER, note that our quad screen mode will also be available for anyone to "look" at any incoming video on this switched-out voter port.

We are going to put a horizontal sync switch between the voter port #4 and the HV122 (1280Mhz DVB-T) and if port #4 is activated, anyone in the local area that happens to be transmitting video on DVB-T (439 MHz), the valid signal switch already in-place on the site's HV110 will cause this port to drop out and the voter will then continue to run and then lock on to the 439 MHz DVB-T local signal.

So, if we were to activate port number 4 on the Intuitive Circuits voter, the voter will stop on this port since video is present all of the time, and any ATCO transmissions coming into the ATV repeater will be repeated. If anyone locally transmits on 439 MHz DVB-T during the active port condition, it will cause the port to go inactive and allow for local 439 MHz DVB-T signals to be repeated by the ATV repeater.

1268MHz ATCO Repeater signal received from portable yagi on a 20-foot mast.

This configuration will allow half duplex for folks at ATCO to work into the DARA repeater.

We will always have "full duplex" available if needed by simply enabling the QUAD screen, and either half duplex or full duplex when voter port #4 is switched in. The plan here is that with a simple audio link through the DVB-T audio channel, ATCO will also be able to remotely switch in and out the quad screens at the DARA site in order for them to view the full duplex maintenance screen. This will allow a remote operator to be able to see his ATV signal repeated back.
…Dave AH2AR

Here Art is holding the truck in place! Mast is in background attached to plate held in place by the truck rear wheel.

W8RWR ANTENNA MAST PROJECT

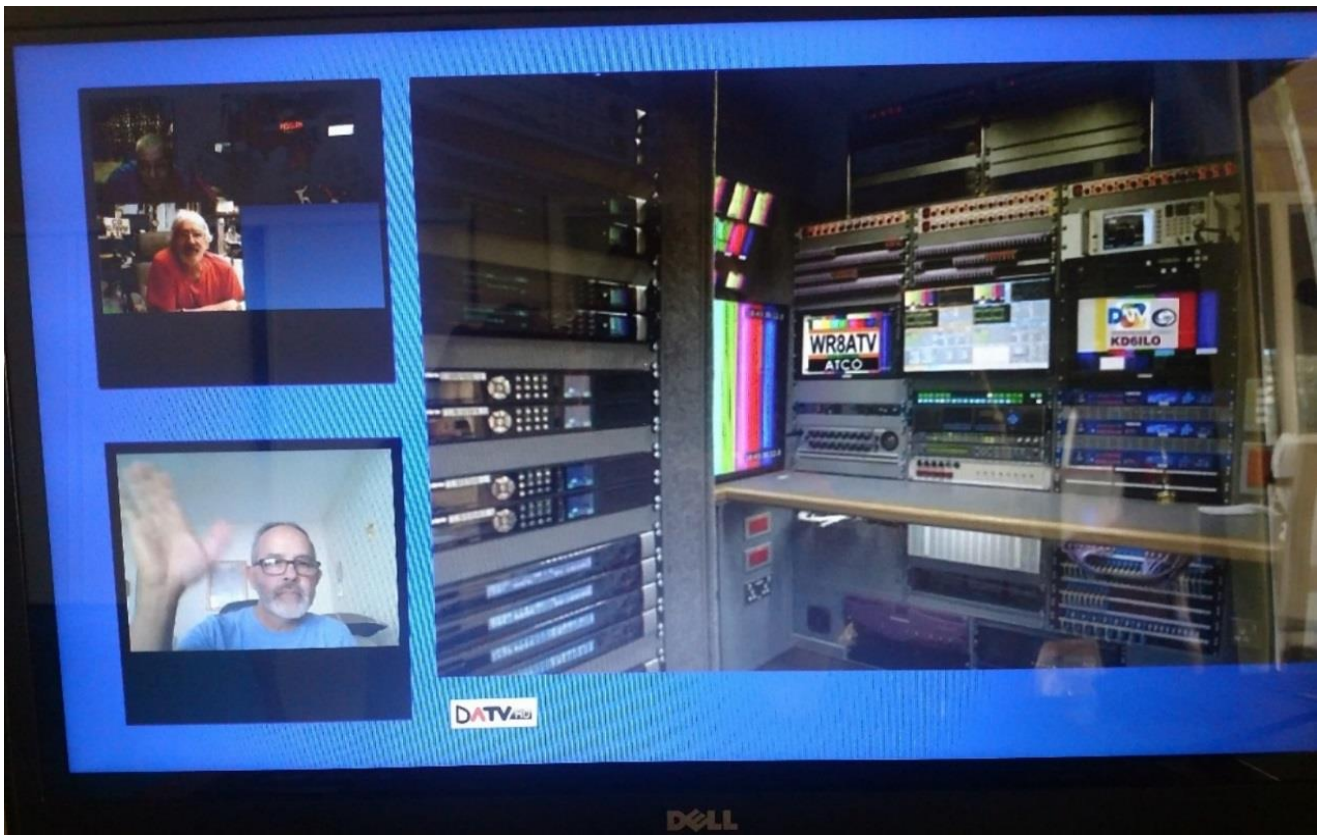
Bob, W8RWR, has had issues with his old 439 Yagi antenna for quite some time now. Mounted on the chimney, it was tilted and pointing in the wrong direction. Finally, his brother and he got together, removed the old antenna and proceeded to find a better way to mount a new one. He settled on a M^2 antenna and a flag pole for the mast. That combination will be easier to maintain and rotate if needed. So far, he has mounted the antenna and installed the pole. To be done yet is running the LMR400 cable into the shack.

Until he gets the cable connected, the flag will have to do! (Go Bucks) Good luck Bob!
…WA8RMC

WELL EQUIPPED HAMSHACK

Check this out guys. Mario, KD6ILO, has the best equipped Hamshack I know of. See the pictures below. I challenge any of you to try your hand at it. Although he uses professional editing software, Vmix and Open Broadcaster free software can come close. See what you can do to dazzle us with your accomplishments. Can you create a customized logo screen like Mario has done? If you come up with an especially good one, I'll add it to the repeater revolving ATCO ID screens for all to see. Mario may add it to his too.

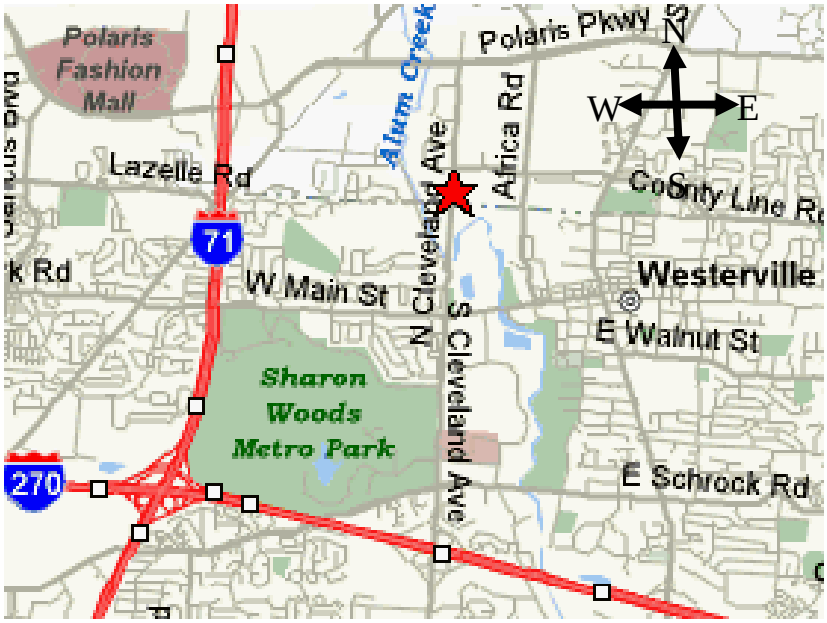
…WA8RMC



ATCO

2019 FALL EVENT
12:00 PM Lunch/meeting
Sunday October 27, 2019
ABB PROCESS AUTOMATION
CAFETERIA
579 EXECUTIVE CAMPUS DRIVE
FOR MORE DETAILS, CONTACT
ART - WA8RMC 891-9273
LUNCH PROVIDED - DOOR PRIZES -
BRING A FRIEND AND SEE OLD BUDDIES
MINI HAMFEST - SHOW AND TELL

DIRECTIONS TO THE ATCO FALL EVENT



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

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

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

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

LOCAL HAMFEST SCHEDULE

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

11/02/2019 | GARC Hamfest

Location: Georgetown, OH
Type: ARRL Hamfest
Sponsor: Grant Amateur Radio Club
Website: https://www.facebook.com/Grant-Amateur-Radio-Club-1775764122477536/?modal=admin_todo_tour

11/03/2019 | Massillon ARC Hamfest

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

11/16/2019 | Fort Wayne Hamfest and Computer Expo

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

02/16/2020 Mansfield Mid*Winter Hamfest & Computer Show

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

12/07/2019 | Fulton County ARC Winterfest

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

03/14/2020 | Toledo Hamfest, ARRL Great Lakes Division Convention

Location: Perrysburg, OH
Type: ARRL Convention
Sponsor: Toledo Mobile Radio Association
Website: http://www.tmrahamradio.org

07/19/2020 | Van Wert Hamfest

Location: Van Wert, OH
Type: ARRL Hamfest
Sponsor: Van wert Amateur Radio Club
Website: http://w8fy.org

TUESDAY NITE NET ON 147.48 MHz SIMPLEX

Every Tuesday night @ 9:00PM WA8RMC hosts a net for the purpose of ATV topic discussion. There is no need to belong to the club to participate, only a genuine interest in ATV. All are invited. For those who check in, the general rules are as follows: Out-of-town and video check-ins have priority. A list of available check-ins is taken first then a roundtable discussion is hosted by WA8RMC. After all participants have been heard, WA8RMC will give status and news if any followed by late check-in requests or comments. We usually chat for about ½ hour so please join us locally or via internet at https://batc.org.uk/live/wr8atv/. Click on WR8ATV.

ATCO TREASURER'S REPORT - de N8NT

OPENING BALANCE (07/20/19)	$ 3509.88
RECEIPTS(dues)	$ 20.00
PayPal fees	$ (1.18)
US postage	$ (7.00)
CLOSING BALANCE (10/20/19)	$ 3521.70

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: Stan Diggs AA8XA
Newsletter editor: Art Towslee WA8RMC

ATCO REPEATER TECHNICAL DATA SUMMARY

Location: Downtown Columbus, Ohio
Coordinates: 82 degrees 59 minutes 58 seconds (longitude) 39 degrees 57 minutes 47 seconds (latitude)
Elevation: 630 feet above the average street level of 760 feet (1390 feet above sea level)

TV Transmitters: 423.00 MHz DVB-T, 10 W contin, FEC=7/8, Guard=1/32, Const=QPSK, FFT=2K, BW=2MHz, PMT=4095, PCR=256, Video=256, audio=257
427.25 MHz Analog VSB AM, 50 watts average 100 watts sync tip (cable channel 58)
1258 MHz 40 watts FM analog
1268 MHz DVB-S QPSK 20W continuous. SR=3.125MS, FEC=3/4, PMT=32, Video=162, Teletext=304, PCR=133, Audio=88, Service =5004)
Channel 1 is fed from all receivers. Channel 2 is fed direct from 439.25 analog receiver.
2397 MHz Mesh Net transceiver 600mw output (channel 1 minus 2). ID is WR8ATV-2
10.350 GHz: 1 watt continuous analog FM
Link transmitter: 446.350 MHz: 5 watts NBFM 5 kHz audio. This input is a secondary input and used for control signals.

Identification: 423, 427, 1258, 1268 MHz, 10.350 GHz transmitters video ID every 10 min. with active video and information bulletin board every 30 minutes.
423 MHz digital, 1268 MHz digital & 10.350 GHz analog - Continuous transmission of ATCO & WR8ATV with no input signal present.

Transmit antennas: 423.00 MHz - 8 element Lindsay horizontally polarized 6 dBd gain "omni"
427.25 MHz - Dual slot horizontally polarized 7 dBd gain "omni" major lobe east/west, 5dBd gain north/south
1258 MHz - Diamond vertically polarized 12 dBd gain omni
1268 MHz - Diamond vertically polarized 12 dBd gain omni
2397 MHz - Ubiquiti dual polarity omni 13dBi gain slot for channel 1 minus2 MESH Rx/Tx operation
2397 MHz - Comet Model GP24 vertically polarized 12 dBd gain omni (Used for experimental Mesh operation)
10.350 GHz - Commercial 40 slot waveguide horizontally polarized 16 dBd gain omni

Receivers: 147.480 MHz - F1 audio input with touch tone control. (Input here = output on 446.350)
439.000 MHz - DVB-T QPSK, 2MHz BW. Receiver will auto configure for FEC's. (Input here = output on all TV transmitters)
439.250 MHz - A5 NTSC video with FM subcarrier audio, **lower sideband**. (Input here = output on all TV transmitters & also direct to 1268 MHz DVB-S output channel 2.)
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 SR=4.167MS, fec=7/8. PIDs: PMT=133, PCR=33, Video=33, Audio=49 (Input here=output on all Transmitters)
2398.00 MHz - F5 video analog NTSC. (Input here = output on all TV transmitters) (inactive at this time because of MESH on 2397)
10.450 GHz - F5 video analog NTSC. (Input here = output on all TV transmitters)

Receive antennas: 147.480 MHz - Vert. polar. Diamond 6dBd dual band (Shared with 446.350 MHz link output transmitter)
438.00/439.250 MHz - Horizontally polarized dual slot 7 dBd gain major lobe west (Shared with 438 & 439 receivers)
1288.00 MHz - Diamond vertically polarized 12 dBd gain omni (shared with analog and DVB-S receivers)
2398.00 MHz - Comet Model GP24 vertically polarized 12 dBd gain omni (inactive at this time because MESH is on 2397)
10.450 GHz - Commercial 40 slot waveguide horizontally polarized 16 dBd gain omni

Auto mode Input control:

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

Manual mode Functions:

00* then 1 for Ch. 1	Select 439.25 analog /438 digital receiver (if video present on digital, it is selected. Otherwise analog)
00* then 2 for Ch. 2	Select 1288 digital receiver
00* then 3 for Ch. 3	Select 1288 analog receiver
00* then 4 for Ch. 4	Select 2398 receiver
00* then 5 for Ch. 5	Select video ID (17 identification screens)

01* or 01#	Channel 1 439.25 MHz scan enable (hit 01* to scan this channel & 01# to disable it)
02* or 02#	Channel 2 1288 MHz digital receiver scan enable
03* or 03#	Channel 3 1288 MHz analog receiver scan enable
04* or 04#	Channel 4 2398 MHz scan enable
A1* or A1#	Manual mode select for 439.25 receiver audio
A2* or A2#	Manual mode select for 1288 digital receiver audio
A3* or A3#	Manual mode select for 1288 analog receiver audio
A4* or A4#	Manual mode select for 2398 receiver audio
C0* or C0#	Beacon mode – transmit ID for twenty seconds every ten minutes
C1* or C1#	No function at this time
C2* or C2#	No function at this time

ATCO MEMBERS AS OF October 2019

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	937-264-9812
W8ARE	Terry Meredith III	6070 Langton Circle	Westerville	OH	43082-8964	
K9BIF	Charlie Short	415 West Pike Street	Goshen	IN	46527-0554	
VK3BFG	Peter Cossins	14 Coleman Road	Melbourne	Au	03152	
N9BNN	Michael Glass	6836 N. Caldwell Rd	Lebanon	IN	46052	
WB8CJW	Dale Elshoff	8904 Winoak Pl	Powell	OH	43065	614-210-0551
N8COO	C Mark Cring	2844 Sussex Place Dr.	Grove City	OH	43123	614-836-2521
N3DC	William Thompson	6327 Kilmer St	Cheverly	MD	20785	301-772-7382
K8DMR	Ron Fredricks	8900 Stonepoint Ct	Jennison	MI	49428-8641	
WA8DNI	John Busic	2700 Bixby Road	Groveport	OH	43125	614-491-8198
N8DUK	Ron Reynolds	2173 Noe Bixby Rd	Columbus	OH	43232-4131	
WB8DZW	Roger McEldowney	5420 Madison St	Hilliard	OH	43026	614-405-1710
KB8EMD	Larry Baker	4330 Chippewa Trail	Jamestown	OH	45335-1210	
N8FRT	Tom Flanagan	6156 Jolliff St.	Galloway	OH	43119	
W8FZ	Fred Stutske	8737 Ashford Lane	Pickerington	OH	43147	
WB4IR	Bob Holden	7725 Tressa Circle	Powell	TN	37849	865-314 - 4285
WA8HFK,KC8HIP	Frank & Pat Amore	P.O. Box 2252	Helendale	CA	92342-2252	760-503-8106
W8KHP	Allen Vinegar	2043 Treetop Lane	Hebron	Ky	41048	
WA8KKN	Chuck Wood	5322 Spruce Lane	Westerville	OH	43082-9005	614-523-3494
WB9KMO	Rod Fritz	8334 E. Culver Street	Mesa	AZ	85207	
WA8KQQ	Dale Waymire	225 Riffle Ave	Greenville	OH	45331	937-548-2492
WB8LGA	Charles Beener	2540 State Route 61	Marengo	OH	43334	
W8MA	Phil Morrison	154 Llewellyn Ave	Westerville	OH	43081	
KA8MID	Bill Dean	2630 Green Ridge Rd	Peebles	OH	45660	
N8NT	Bob Tournoux	3569 Oarlock Ct	Hilliard	OH	43026	614-876-2127
W8NX, KA8LTG	John & Linda Beal	5001 State Rt. 37 East	Delaware	OH	43015	740-369-5856
KB8OFF	Jess Nicely	1888 Woods Drive	Beavercreek	OH	45432	
W6ORG,WB6YSS	Tom, Maryann O'Hara	2522 Paxson Lane	Arcadia	CA	91007-8537	626-447-4565
N8OCQ	Bob Hodge Sr.	3750 Dort Place	Columbus	OH	43227-2022	
AE6QU	Ron Phillips	2227Via Puerta unit N	Laguna Woods	CA	92637	
WA8RMC	Art Towslee	438 Maplebrooke Dr W	Westerville	OH	43082	614-891-9273
W8RUT,N8KCB	Ken & Chris Morris	2895 Sunbury Rd	Galina	OH	43021	
KB8RVI	David Jenkins	100 Miller Ave Apt 108	Ashville	OH	43103	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	
WA6SVT	Mike Collis	PO Box 1594	Crestline	CA	92325	
NR8TV	Dave Kibler	243 Dwyer Rd	Greenfield	OH	45123	937-981-1392
KB8UWI	Milton McFarland	115 N. Walnut St.	New Castle	PA	16101	
WA8UZP	James Reed	818 Northwest Blvd	Columbus	OH	43212	614-297-1328
KB9VGD	Gary Oaks	472 Storle Ave	Burlington	WI	53105-1028	
KC8WRI	Tom Bloomer	PO Box 595	Grove City	OH	43123	
AA8XA	Stan Diggs	2825 Southridge Dr	Columbus	OH	43224-3011	
AC8XP,KE8GTT,KE8HPA	Troy,Seamus Bonte	5210 Smothers Road	Westerville	OH	43081	
AC8YE	Larry Howell	4080 Dill Road	Centerburg	OH	43011-9771	
KB8YMQ	Jay Caldwell	4740 Timmons Dr	Plain City	OH	43064	
KC8YPD	Joe Ebright	3497 Ontario St	Columbus	OH	43224	
KD8YYP	Anna Reed	818 Northwest Blvd	Columbus	OH	43212	
WB8YTZ	Joe Coffman	233 S. Hamilton Rd	Gahanna	OH	43230-3347	
N8YZ	DaveTkach	2063 Torchwood Loop S	Columbus	OH	43229	614-882-0771
W8ZCF	Farrell Winder	6686 Hitching Post Ln.	Cincinnati	OH	45230	513-218-3876
N8ZM	Tom Holmes	1055 Wilderness Bluff	Tipp City	OH	45371	

NEW MEMBER(S)

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

ATCO MEMBERSHIP INFORMATION

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

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

Your support of ATCO is welcomed and encouraged.

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

ATCO MEMBERSHIP APPLICATION

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

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

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

FIRST CLASS MAIL

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