# ATCO NEWSLETTER

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## ATCO HAM IN THE SPOTLIGHT

This time we visit with Bob Hodge, N8OCQ as he stands in the back yard of his newly acquired home. These two vertical antennas are ready to go up right after he gets a lawn mower to cut the grass!

Bob has been active in ATV for a number of years now but you’ve always seen him at Ted’s because his previous apartment did not allow antennas. So, on Net night, he’d always go over to Ted’s and check in from there. His new place allows towers and antennas so you’ll be able to watch him at home from now on.

Way to go, Bob!

## ACTIVITIES ... from my "workbench"


OK, it's my turn to stand on the soap box again. I just finished cutting the lawn for the first time this year and the beer has been consumed so now I can give the Newsletter my undivided attention. It might not be great, (too much beer) but here goes anyway.

The repeater has been operating pretty well but improvements have not been given the attention deserved. A notable exception is the 146.76 repeater which has been getting into the video from its third harmonic. That comes out at 440.28, right in our video passband. I designed and built a low pass filter for the 146.76 transmitter and installed it in mid winter. That seemed to have taken care of the interference. Case closed? Not quite! A short time ago during a 146.76 equipment upgrade, they noticed a high SWR on their transmit line. They removed the low pass filter and it went away. So the filter comes back to me for inspection. I see no problem but decide to do a HiPot test on it just in case. That's where a high voltage is impressed from active element to ground looking for a voltage breakdown. It arced over at about 400 volts. A closer inspection revealed some solder flux and a small piece of solder on one of the capacitor plates. (it's an air variable capacitor). A good cleaning produced no arcover up to 500 volts (As high as the tester would go). Feeling confident, we went back to the repeater to re-install it. No SWR at first, but then it appeared. After testing it was decided there is a problem in the 146.76 transmission line or antenna. The filter was ok after all but guess what? I broke the N connector re-installing it. (Sometimes we can't win no matter how hard we try). We'll re-install the filter soon.

Next, I was given the OK to gut the spare equipment cabinet from the city microwave system and use it as we wish. We had planned to use it in place of our existing cabinet because it is RF tight and about 8" taller but 3" shallower. After I got all of the old 7 Ghz microwave stuff out I re-inspected the cabinet and decided that the effort probably is not worth it. We'd gain height but at the sacrifice of depth. Some filters would have to go on the top outside of the cabinet. And I'm sure you know that moving all the equipment will not go without problems. Something will refuse to work. (Sorry to be paranoid but it always seems to go that way. Experience talking). So, for now, we'll leave it as is. There is another cabinet up there that might be discarded so if available, it would be a better choice. It is the same height as ours but 6" wider, still with a 19" rack inside. It is also RF tight. That cabinet would alow us to attach the filters on each inside wall and still have pleanty of room for rack equipment access. We'll see!

Next on the problem list is the ATCO/DARA link controls. As you may know, it was shut down because of excessive power dissipation. Because it is located in a rural location without a home address, it goes under an industrial classification as far as the power company is concerned. The once-upon-a-time electric bill of about $6 per month was about $30 per month with all equipment running. Until we sort it out and try to minimize the electric situation, it will be shut off. Besides, additional audio problems surfaced without a solution. We decided to step back and re-evaluate the situation**. First**, the 900 Mhz path to Dayton needs to be studied for viability. It seems that it takes 100 watt amps at both Dayton and South Vienna to get an acceptable signal through the noise. We must look at it again and possibly go to another band. (The 1200 Mhz link between Columbus and South Vienna seems OK, however). **Second**, we must solve the AC power problem. I suggested, during a discussion, that if it was going to cost us (Springfield repeater group, DARA and ATCO) about $30/ month ($360 per year) it would be better to put the money into added solar and wind resources to make us independent of Edison. Long term, we will definitely come out ahead. I looked into fuel cells but at this time it is not an econimical choice. A 1.2 kw unit will cost about $6400 (unless there is someone out there willing to donate one for the publicity). I will not hold my breath. In the meantime Tom Taft, KA8ZNY, donated a set of 200 AH 12 volt batteries to add to the battery bank already at South Vienna. They presently have a 4 ft square solar panel and are going to re-install their wind generator damaged by a storm 2 years ago. They tell me they have two additional solar panels that could mount on the shack roof if needed. I estimate we need about 300 watts of power to run our stuff. Springfield feels 250 watts for theirs is sufficient. It looks as if we install the added solar panels, add the extra batteries and add the wind generator, we will have enough to be able to tell Ohio Power to come out and get their electric meter. If any of you know where we can get more solar panels and or wind generators, let us know.

There are many more things I'd like to do but I am time limited right now. Be patient. The digital system needs a power upgrade. I thought we might be able to see our digital output at South Vienna but no luck. Maybe with a little more power here it will be possible. I plan to run a power vs error rate linearity test in my back yard this summer. I'll let you know of the results. To help with the analysis, I got a great digital and Hi Def software analyzer program that computes the error rate of a digital signal. It also allows digital TV editing on a computer hard drive. It was donated by an ATV group east of here. I have yet to test drive it but if anyone here would like to, let me know. I will talk more about this at the ATCO Spring Event. Remember the Spring Event is May 7 at ABB on Cleveland Ave. Don't miss it!

That's all for now.
…WA8RMC

# CENTRAL PA ATV REPORT...just a glimpse of other ATV activities!

**FEBRUARY 2006**

The Omni 11 dBd gain antenna on 3480 MHz at White Rock has been working well. A ring terminal was placed on the N connector at the base of the antenna and soldered to a #6 solid copper wire that was attached to the mast. Polyphaser Corp made a special high power, 90 watt, 3 GHz coaxial lightning arrestor. They do not have this in inventory. They advised to use a transformer type instead of a gas tube or stub. This device requires no maintenance and provides the best protection. One end is protected and the other is marked surge. This was attached directly to the antenna with the protected side toward the antenna. A ring terminal was placed on the coaxial lightning arrestor and soldered to a #6 copper wire that was attached to the mast. Several weeks after we did this we had a lightning hit. We lost a fuse in the transmitter power supply and the 1280 MHz input receiver. Both of these have antennas at the top of the tower. This week we finally added a polyphaser in the shack at the end of the coax. This is a special order 90 watt 3 GHz version. The protected side is toward the transmitter. A more traditional gas tube inline coaxial lightning protector was placed at end of the coax for the 1280 MHz receiver. The signal levels are unchanged with the additional lightning protection.

The Tektronix 1730 Waveform monitors from ABC in New York were checked out and found to be working well. Most needed new light bulbs. One was promised to go to Delaware and one to Laurel, Md. The Tektronix 1720 Vectorscopes also needed light bulbs but worked well. These will stay in the area.

A 3420 MHz filter is being made for use at WITF. This will allow reception of the 3480 MHz signal from White Rock at WITF. We will be able to retransmit the signal then on 3420 MHz. With the antenna improvements at White Rock we can now barely see a signal at WITF. The LNB was completely swamped before the improvements.

The video from the W3HZU club house was quite a surprise. I thought at first I was seeing one of the EOCs in the area. The physical upgrade is to be commended. The York ATV repeater is moving its transmitter (439.25 MHz) to the W3HZU club house. The 426.25 MHz input will stay at Dover.

The ATV test by W3HMS from FM19av Tuscarora to WITF TV 33 at 62.7 miles site gives P5 pix on 3420 MHz when he held the LNB at the right focal length. He will make a simple PVC support pipe adjustment so that LNB is held at the F/L of my 2 ft round dish.

The test to White Rock on 3480 MHz was also P5 when LNB held....same dish and fix apply. Joe was able to get a pix into WR using 2 watts or less to my 28 element WIMO vert pol beam 23 cm beam abt 3-4 ft above ground.

I feel sure that if WX was warmer (for us), he had used a 10 ft mast and a camera support that we would have had a P4-P5 pix.....with an amp no doubt P5 pix.

# SHORT LIFESPAN FOR CD-R's AND CD-RW's

For anyone who has spent an inordinate amount of time burning music and photo CD's or saving data, here is a disturbing story from IDG News Service via MIT's Technology Review magazine. Those CD-R's and CD-RW's that were supposed to last a lifetime may only accomplish that task if you are about to kick the bucket. "Unlike pressed original CD's, burned CD's have a relatively short life span of between two and five years, depending on the quality of the CD," says Kurt Gerelke, a physicist and storage expert at IBM Deutschland. However, some of the blogs associated with the article suggest that the actual life is highly variable. Data loss or corruption is also known as "bit rot" in some circles. There are few things you can do to extend the life of a burned CD, like keeping the disc in a cool, dark space, but not a whole lot more. Magnetic tape Is probably the best alternative according to Gerelke.

# LIFESPANS OF CD-R's AND CD-RW's - PART II

Kurt Gerecke, a physicist and storage expert at IBM Deutschland, states most burn-your-own CD's would last some two to five years. This article is a follow up with additional information. The definition of disc failure is the heart of the matter. A retired communication engineer looked into archive quality CD's and notes that music CD's can play pretty well with uncorrected bit errors, whereas those same errors might he catastrophic for other applications.

For those interested in accelerated wear testing on CD's, check the Web site: http://www.itl.nist.gov/div895/gipwg/stabilitystory.pdf Note the outstanding performance of "Silver+Gold Phtalocyanine" CD's. This paper, from the Journal of Research of the National Institute of Standards and Technologies (Sept-Oct 2004), also indicates it is wise to store CD's in COOL/DARK/DRY places. Kodak, at one time, offered these discs, but they have since been discontinued. Refer to: http://www.kodak.com/ global/en/service/faqs/faq1630. shtml The bottom line is: The only way to he reasonably safe against both degradation and obsolescence is to copy your data to the latest media every now and then. Use redundancy, have diversity in storage location and make COOL/DARK/DRY a rule of thumb for storage.

# HAMVENTION SATURDAY ATV FORUM DETAILS

Amateur Television (Fast Scan) . . . . . Room No. (tba)

***NOTE: As of this writing, the only times available are late Friday or 1:00 PM on Sunday. Both times are poor, so I don't know how it will turn out Stay tuned! ... WA8RMC***

Moderator: **Bill Parker, W8DMR**
Speakers: **Mel Alberty, KA8LWR**, ATV for the Beginner with DX in Mind, station setup, preamp, antennas, plane-to-plane, plane-to-earth stations.
**Bill Brown, WB8ELK**, ATV in the Stratosphere, upper atmosphere video transmissions.
**Bill Parker, W8DMR**, White-light Emitting Diodes, the theory of operation with demonstrations.
Announcements by: Dick Goode, W8RVH, DARA ATV Status; Ron Cohen, K3ZKO, ATNA Activities; Gene Harlan, WB9MMM, ATVQ Editor; Art Towslee, WA8RMC, ATCO Editor

# ANALOG TO DIGITAL TV DATE SET

After many months and years of political wrangling, an official cutoff date has finally been selected as the changeover from analog television broadcasting to the use of a fully digital system. Legislation signed into law by President Bush has declared the date of February 11. 2009 as the official change over day. Some 60% of analog television channels will he auctioned to the land mobile spectrum.

Some of the monies received from the spectrum auction will go into a fund to provide persons using present analog receivers to obtain a set top converter which will change the digital signal hack to analog. Interesting, there is no guarantee that you will not receive a terrestrial signal in digital, although you presently receive the signal in analog. Also, digital stations will use only 10 % of the current effective radiated power. This will no doubt have to he adjusted after the changeover is made. One plan is to cover certain locations with synchronized translators. The interesting thing is that if you are unable to receive the digital signal the converter box will be useless, as will a new television receiver with a built in digital tuner. So far, no digital testing has been done in what is known as fringe, far fringe and distant fringe areas, to see if reception will be available in these areas.

The new receivers will not be 'user friendly' as consumers will be going from one system to a system which offers 18 different selections. Broadcasts may be interlaced or progressive scan format, with resolution varying from 480 to 1080 lines. The aspect ratio of the television screen will change from the traditional 4:3 to 16:9. Note: not all "high definition" receivers are digital. When shopping do your research before making your purchase.

# NEW MEMBER(S)

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

KB8GHW Mike Amirault Pataskala, OH
KB8UGH Steve Caruso Pataskala, OH (welcome back, Steve)

…WA8RMC

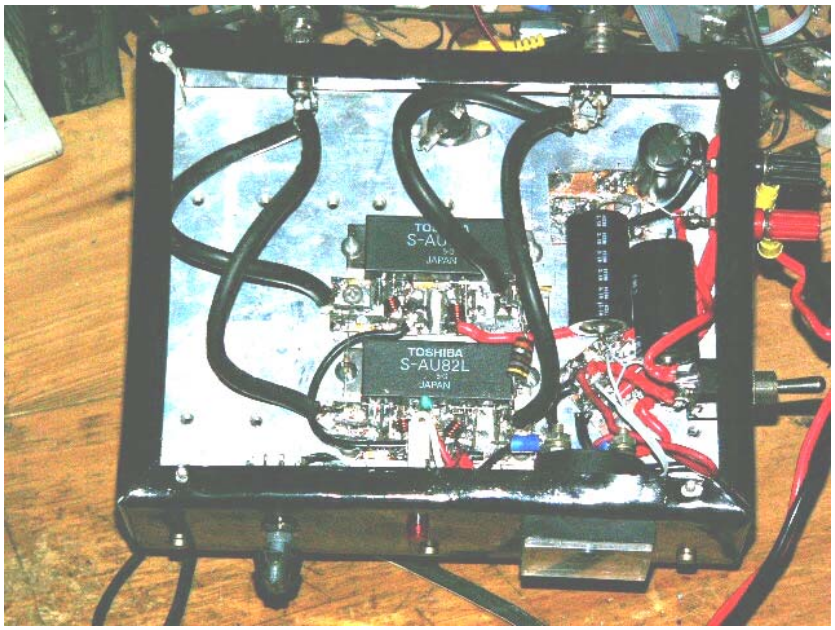
# A LINEAR 60 WATT AMPLIFIER FOR 70 CM ATV

This article describes a 70 Cm, 120 watt peak output ATV amplifier using two Toshiba S-AU82L (440-470 MHz) RF modules. A single module can deliver 60 watts of output for 50 mw of drive input. Type L-Fets are used in the amplifier thereby reducing the drive needed.

For linear amplitude modulation (AM), the average non-distorted ATV output obtainable is about one third to one half of the PEP output. Otherwise, severe distortion (clipping) occurs.

With one module only, the maximum output is 25 watts. For a strong video RF carrier, 50 watts of average output is needed. Using two modules in parallel, 50 watts average output is obtainable, and with modulation peaks (sync tips) of up to 100 watts!

Two of the S-AU82L amplifiers are used in parallel and must be accurately phased together. A Wilkinson splitter/combiner, consisting of 1/4 wave lines, is used on both the input and output of each module. The lines require careful and accurate construction.




The module are specified to withstand a 20-to-1 VSWR on the output without catastrophic failure. The amplifier operates on 12 volts DC. Each unit draws a max. of 15 amperes of current (a total of 30 Amps.). Like most RF modules, there are only 4 external connections are required for operation.

Viewing the schematic and photos from left to right:

(1) The RF input pin has a max. of 150 mw of power. The 1/4 wave coax lines must be connected to the connector using very short braid lengths, and directly at the connector. No long lengths here!

(2) The next pin is Vgg bias pin. It is set for 0 - 5.5 VDC. The higher the level, the more the Idle current will be. With 5 volts, it draws around 9 Amps. per module. With one diode in series with the 5 volts, the Vgg voltage level will be 4.3 VDC and the idle current near 6 Amps. Using two diodes in series, and Vgg at 3.6 VDC, the idle current lowers to 3 Amps.
Three diodes (Vgg 2.9 VDC) reduce the idle current to 0.7 Amps. In the Standby mode, three diodes in series are used. However, in the Operate mode, the diodes are bypassed with a relay and changes the Vgg voltage to 5 VDC.
A hefty 18 amps of current is consumed for two modules. The current doesn't change with or without RF drive. The duty cycle is 100% of the time.

(3) The third pin is the DCV power pin. It needs to be 12-16VDC from at least a 20 amp supply. Be aware, it is a continuously available 20 Ampere supply, not a peak capability of 20 Amps. The conductors from the 12 VDC power supply to the amplifier will be carrying 18 Amperes! Using conductors of #16 AWG size or 18 AWG and higher is NOT recommended. Use #12 AWG size or 10 AWG and lower IS recommended.

The output power of the amplifier is considerably reduced when the leads supplying power are of insufficient current carrying capacity. Far better to have excess current carrying capability than lack thereof.

(4) The fourth pin is the RF output. The 1/4 wave coax length again must be connected as close as possible, using very short braid lengths and directly to the connector.

At each module, the center lead of coax must be close to the output pin. The shield needs to be close to the heat sink of the module. This is the ground substrate of the module. Ground lugs are used between the mounting screws and the PC Board ground area.

The PC board is made out of two sided PC board. A Dremel tool with a round grinder blade was used in removing the copper to make the runs. It takes about 5 minutes to make each board.

Using paper thin brass shimming stock, cut it to fit the ground areas of the PC board. Solder it onto the top ground area. Then wrap it around the edge of the PC board onto the bottom side of the board and solder it. It helps to make the PC board a good, low inductance RF ground.

As with most RF amplifier modules, RF lead decoupling is a necessity! Every DCV leads requires it. The physical placement of the two RF modules must be also be in close proximity. This helps in keeping the lead length of the Wilkinson resistor short.

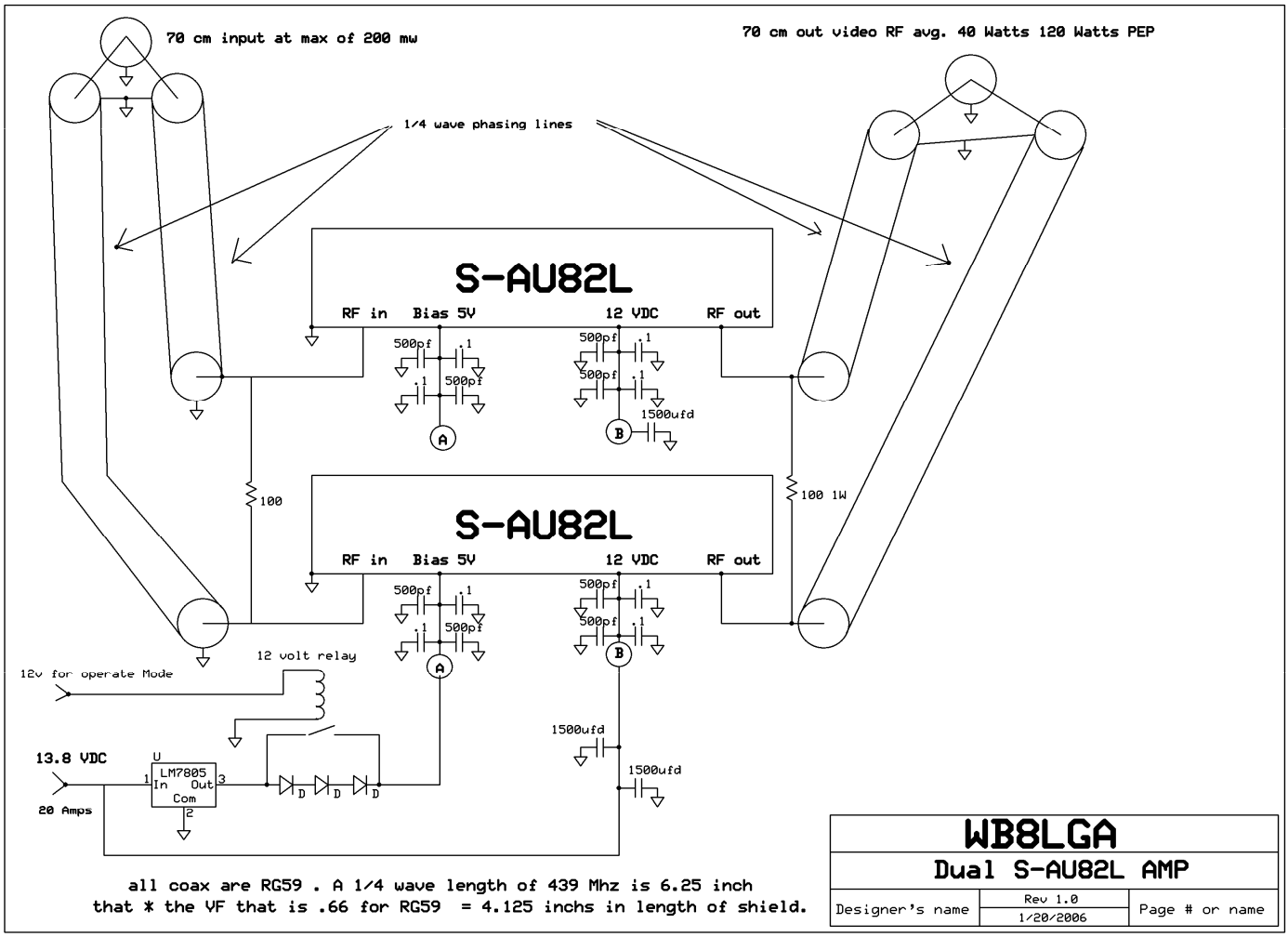
The length of the 1/4 wave coax phasing line is 6.2 inches times the velocity factor of the coax used. Typically, it is 66% for RG-59, or about 4.1 inches.

Using a single Vgg supply for both modules, use coax for the Vgg supply to the modules. This minimizes lead coupling.

It is a good idea to place a DC Amp meter on the front panel to indicate the supply current all the times. A 0-25 Amp works fine.

When mounting the modules to the heat sink, MAKE sure to use silicon grease. Mount the modules before you install the PC board and before you solder the PC board to the module. You don't want to damage the module with to much pressure on the leads. After that is completed, the module can be removed using the screws to the PC board without damaging the modules.

The heat sink on the amplifier is 6" by 9" with 1" fins. Mount a 5", low noise, fan on top of the head sink. It starts when power is first applied to the amplifier. The amplifier can operate for half-an-hour without getting hot. For a power supply rated at only




20A, add a fan to it. When the amplifier is in the Operate mode, the cooling fan for the 20 A power supply is turned also.

If you are using a MHWXXX module and it goes bad I would suggest it be replaced with one of the S-AU modules. The PC board will need to be changed, if you would want to go from 10 watts to 60 watts PEP. The modules may be purchased from RF Parts, www.rfparts.com for $52. A mere 10 watt brick alone is over $40.

Much thanks for help from Mel(KA8LWR) and Bill(W8DMR) on this article. To draw the circuit we used the program from http://www.expresspcb.com/ExpressPCBHtm/Free_schematic_software.htm the ExpressSch program is a very good and easy to use program.

…Charles Beener, WB8LGA

# THE YEAR OF ULTRA-WIDEBAND

*Here goes 10Gig, just when I thought they might leave it alonet! ED*

Ultra-Wideband (UWB) is one of the hottest wireless technologies. We've been hearing about it since 2002, when the Federal Communications Commission authorized the use of the 3.1- to 10.6-GHz spectrum for unlicensed services. Sooner or later, maybe it will settle down so designers can begin incorporating it into their work.

Lots of chip development has been going on, and some real products are finally available. If it weren't for the division in the IEEE UWB standards process, perhaps we would have seen some of these products sooner. The IEEE 802.15.3a Task Group split over the technologies and hasn't been able to work out a compromise yet.

One of these factions, Freescale Semiconductor, bought Xtreme Spectrum's Trinity chip design and brought it to market. The Freescale design uses direct-sequence (DS) coded pulse-type UWB, which is a more traditional approach.

The other faction comprises all of the other semiconductor companies, which got together and developed the orthogonal frequency-division multiplexing (OFDM) version of UWB. Next, they formed the Multiband OFDM Alliance (MBOA) to promote it. The MBOA eventually merged with the WiMedia Alliance to provide a formal standard that members could subscribe to and to eventually offer testing and certification of UWB radios, *a la* the Wi-Fi Alliance.

As for the IEEE standards process, forget it. The 802.15.3a Task Group recently voted to formally abandon the effort to establish a single standard. So we'll have two standards to choose from, the DS-UWB approach and the OFDM version from WiMedia.

While Freescale probably was the first company to market a full-blown UWB chip set, it hasn't been widely adopted yet. I suppose potential customers were waiting to see what the OFDM WiMedia crowd was going to do. Well, that bunch finally has done it, and quite a few vendors are promoting their new chip sets.

Alereon, Focus Enhancements, Staccato, Texas Instruments, WiQuest, and Wisair all offer the same thing—a chip set and a way to interface with a USB port. WiQuest built its USB port right into the chip, giving the company an advantage. Wireless USB seems to be the sweet spot for UWB. Freescale has a USB interface too. In fact, Freescale may have been the first company to implement USB by UWB.

The OFDM version of UWB uses three 528-MHz wide bands in the 3.1- to 4.8-GHz range. There are 128 channels or carriers per band using quadrature phase-shift keying (QPSK). The max data rate is set to 480 Mbits/s, which is the fastest speed for USB. Higher speeds are possible with additional tricks. WiQuest already has incorporated capability for up to 1 Gbit/s.

The big issue with UWB is range. Top distance is about 10 m, making it a personal-area networking (PAN) technology. Its maximum rate occurs at a much shorter distance, about 2 m. At the maximum range, the data rate will be at least 100 Mbits/s. The standard scales down to 53 Mbits/s. Of course, the rate is a function of the system's particular environment, including walls, ceilings, floors, and other obstructions. Don't complain, though, as 100 Mbits/s is pretty fast for almost any application, including video.

Video seems to be the other hot UWB application. There are quite a few forthcoming uses for cable-free video transport from the TV set to a plasma screen, from a DVD player to the TV set, and so on. Eliminating the video and audio cable rat's nest is an honorable application. But it has to be fast, and UWB seems to be more than up to the task. The range is well within what UWB offers, too. They seem meant for each another.

The video interface may be an IEEE 1394 port, which has been around for a while. Apple calls it FireWire, and Sony calls it i.Link. This super-fast serial technology uses wire or fiber at a rate up to 3.2 Gbits/s. It's pretty easy to get up to 400 Mbits/s on a CAT5 cable using 1394. Add the UWB, and *voila*, you have wireless video.

Mike Krell, marketing director for Alereon, said that UWB's value proposition is its power efficiency. it offers very high speed while consuming extremely little power. It will do its best job with portable devices like camcorders, digital cameras, and video and audio iPods and MP3 players.

As for who wins the UWB standards war, it appears that the WiMedia OFDM group has the critical mass, the momentum, and the most members. With the WiMedia standard recently accepted as the ECMA International UWB standard in Europe, again the OFDM approach is the winner. But don't count out Freescale and the DS-UWB approach. It will find a place as well. As it turns out, the real competition may not be within the UWB community but with another promising video transport technology, 802.11n.

802.11n technology is the next stop on the Wi-Fi roadmap after 802.11a/b/g. It offers a much faster but compatible version with a data rate to 600 Mbits/s. The 11n technology centers on multiple-input/multiple-output (MIMO) technology that uses two or more

(usually three) antennas and transceivers. Using spatial-division multiplexing, multiple data streams are transmitted on the same band, greatly multiplying the data rate.

A rate to 600 Mbits/s is possible at reduced range. A rate of 150 to 180 Mbits/s is more typical of what users will experience at common Wi-Fi ranges—certainly fast enough for video. The great thing about MIMO is that it really takes advantage of multipath reflections rather than suffering from them. It makes transmission more reliable over longer distances. That may be a better advantage than speed.

If the IEEE standards process wraps up soon, the Wi-Fi Alliance can get ready for its testing and certification programs. We then should see some honest-to-goodness 11n products by early 2007. These products certainly will be able to handle video. Therefore, they could be serious competition for UWB. But UWB has a head start, and it already has made some inroads in the video market. The UWB chips also will be smaller and consume less power than any 11n solution, especially since the 11n chips all have two or three radios or more in them.

On the other hand, 11n will be Wi-Fi interoperable and compatible with the many already installed Wi-Fi home networks. It may draw more power, but in a home wired environment, that probably isn't a big disadvantage. As for speed, UWB probably wins. Yet 11n's longer range will make it a bit more reliable over a large household. Overall, 11n probably is the better video transport just because of its reliable longer range, which will translate into the quality of service consumers demand.

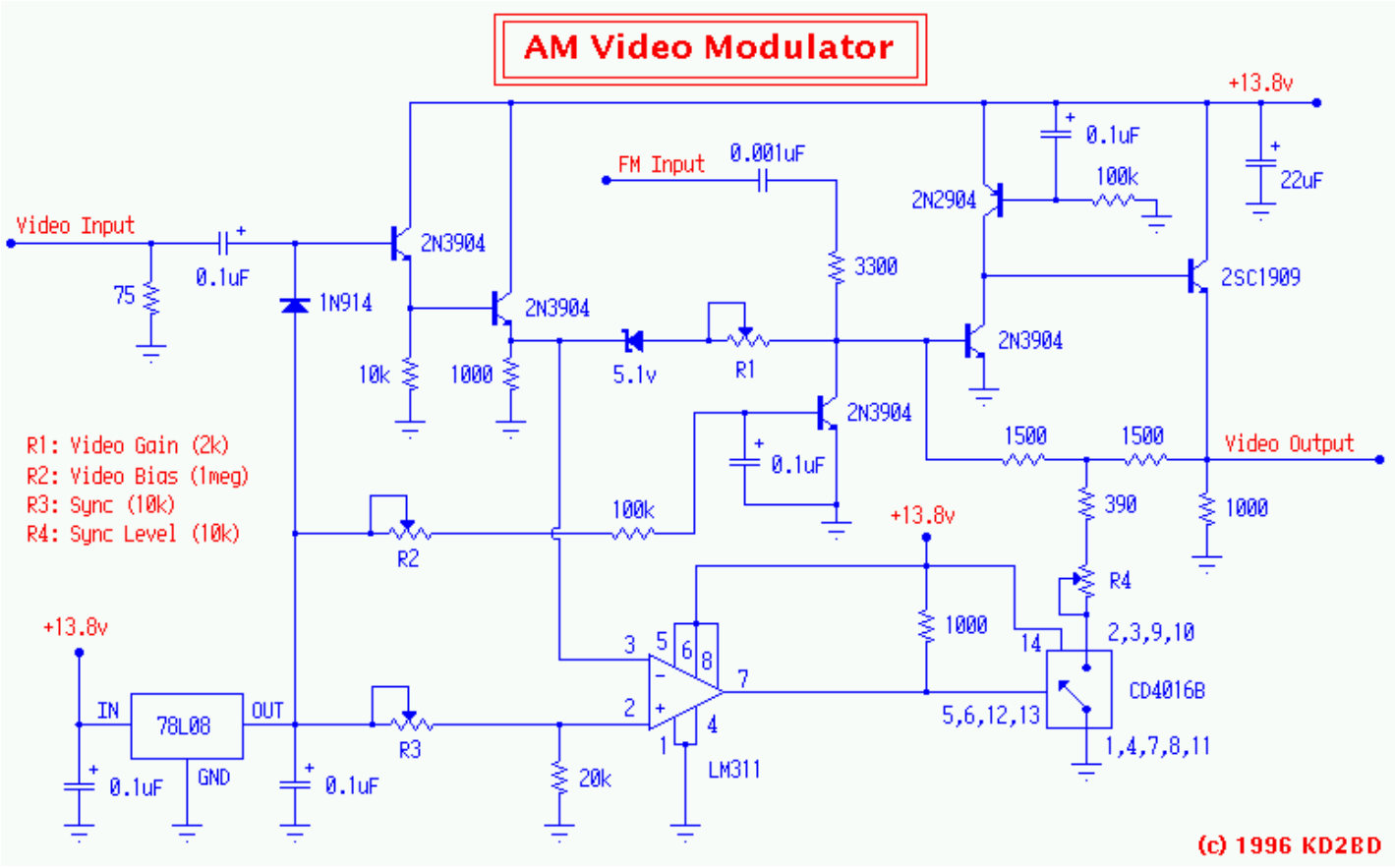
It is anyone's guess how this will turn out. Maybe the two will coexist. In a home environment, I wonder how important total interoperability really is. It's an issue if all of your consumer video products need to connect wirelessly, but otherwise it may not be important.

I think the winner will be UWB because of its low cost, low power, and USB and 1394 capability, not to mention again the head start it has. Yet 11n will be a real winner in its own right. It will triumph in the range war and will even find itself embedded in some cell phones, where UWB may never be. You may get your cell phone video over an 11n hotspot. I can hardly wait to see what the next big wireless technology will be.

…Louis E. Frenzel ED Online ID #12045 February 6, 2006

# VIDEO MODULATOR UPDATE

This is a small article on a update to the KD2DB video modulator. The reference to his article is http://www.qsl.net/kd2bd/modulator.html. His is a very good article and the modulator works very good but I made one change that really improves the operation. I removed the LM311 and replaced it with an LM1881 Video Sync detector chip. The LM311 was very touchy on the detection of the sync. With the LM1881 you can have a good amount of video and as the DC voltage level changes the sync stretcher circuit will remain the same. I first made his video modulator on a PC board and found out the problem with the LM311. Instead of making another PC board I just adapted my original board, removed the LM311 IC from its socket, took some small wires (ends off of resistors) put them into the top of an 8 pin IC socket. I soldered those wires from the socket to a small peace of perf board (about 1 1/2" square). All the parts that's on the circuit drawing inside the dashed lines are put on the perf board. The wires coming from the original LM311 socket will have all the wiring points that you need to interconnect from the original modulator and the perf board , except the video going to the original board. Once this is done, plug the socket that has the wires coming out of it into the LM311 socket on the video modulator. This is the only update of the circuit that needed to change. Do this method if you are going to update a modulator with an LM311 sync stretcher .All the rest of the original circuit is left the same. The original then the modified circuits are shown on the next page.
…Charles Beener WB8LGA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+13.8v
FM Input
0.001uF
Video Input
0.1uF
75
1N914
2N3904
2N3904
10k
1000
5.1v
R1
3300
2N2904
100k
22uF
2SC1909
2N3904
2N3904
0.1uF
1500
1500
Video Output
R1: Video Gain (2k)
R2: Video Bias (1meg)
R3: Sync (10k)
R4: Sync Level (10k)
R2
100k
+13.8v
390
1000
R4
+13.8v
1000
2,3,9,10
14
CD4016B
5,6,12,13
1,4,7,8,11
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OUT
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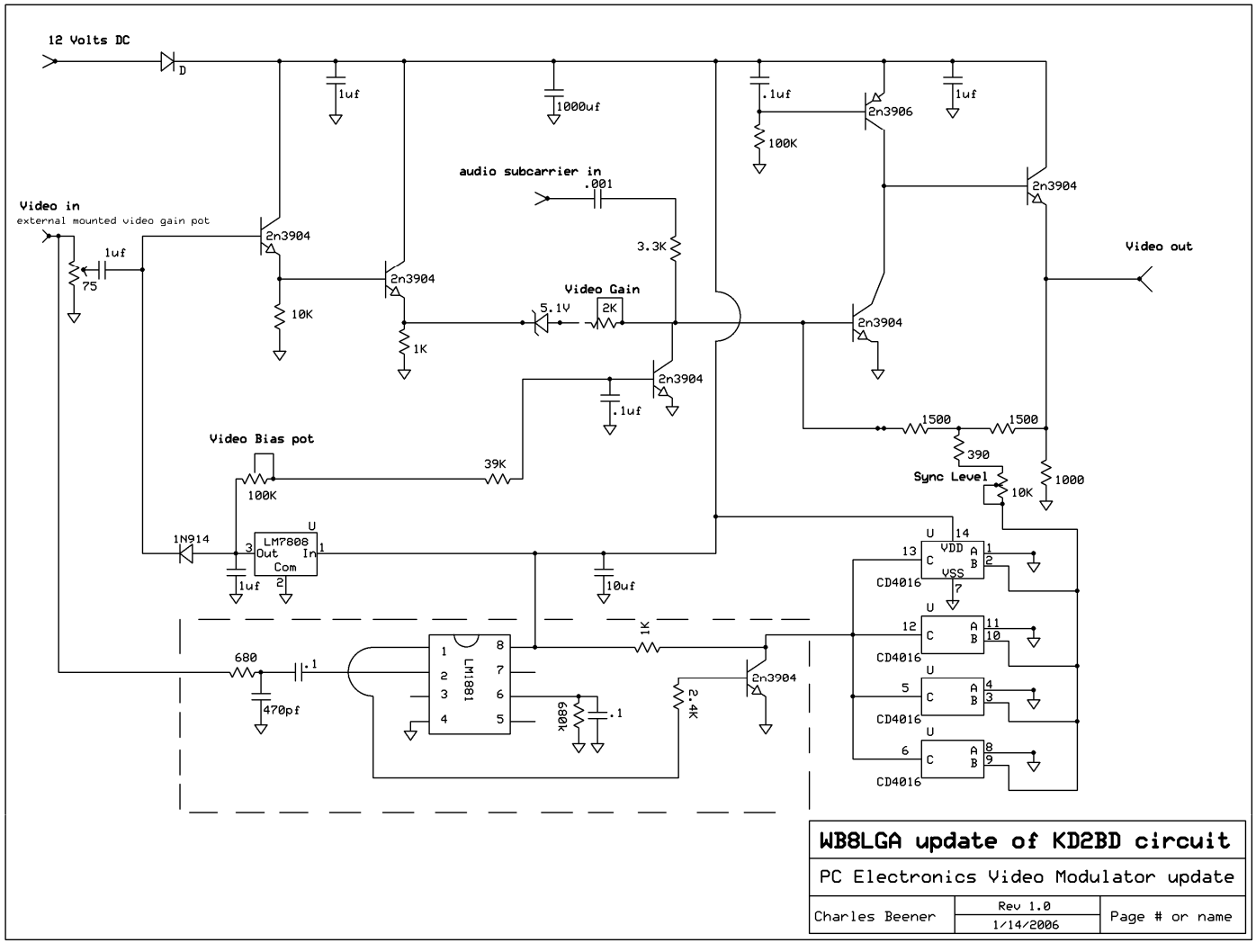
R3
20k
LM311
(c) 1996 KD2BD


12 Volts DC
1uf
1000uf
.1uf
2n3906
1uf
100K
audio subcarrier in
.001
2n3904
Video in
external mounted video gain pot
1uf
75
2n3904
2n3904
3.3K
Video out
10K
1K
Video Gain
5.1V
2K
2n3904
2n3904
.1uf
1500
1500
Video Bias pot
39K
390
Sync Level
10K
1000
100K
1N914
LM7808
Out
In
Com
1uf
10uf
680
.1
470pf
LM1881
1K
2n3904
680k
.1
2.4K
CD4016
VDD
VSS
WB8LGA update of KD2BD circuit
PC Electronics Video Modulator update
Charles Beener
Rev 1.0
1/14/2006
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# ATV COMMUNICATIONS COULD BE BOON IN EMERGENCIES

Imagine, for a moment, that a disaster strikes Laurel. It could be a tornado. It could be a terror attack. It could be a flood. Fire and rescue personnel are spread thin and need to figure out which areas have the most damage and need the most help. Power and phone lines are down, so how do you figure out where the help is needed?

One potential answer might surprise you. Volunteer TV and ham radio operators could potentially use their equipment and backup power to relay live images of trouble spots. "They say one picture is worth a thousand words," said John Watson, one such volunteer. "Imagine what one live video can do in a crisis."

That's why two clubs - the Chesapeake Amateur Television Society and Laurel Amateur Radio Club - are teaming with the city of Laurel and Laurel Regional Hospital to improve the capabilities of local amateur communications. The two clubs have built a repeater to be placed on top of Laurel Regional Hospital that can broadcast signals between amateur operators and city and hospital officials. A repeater is an electronic device that receives a low-level signal and retransmits it at a higher power, so the signal can cover longer distances.

Repeaters and antennae for amateur radio have existed in the area for several years, said Jim Cross, a member of LARC. But none has video capability. The two clubs agreed to work together to introduce amateur TV to the area and also boost power for radio operators. Cross said amateur radio has proved its mettle in emergency communications before, particularly during a snowstorm in January 1996. After the heavy snowfall, hospitals throughout the state were having problems getting doctors, nurses and other personnel to the hospital since many could not drive through the two feet of snow. But ham operators were able to contact volunteers with four- wheel- drive vehicles who could then pick up doctors and nurses.

More recently, LARC worked in a more official capacity when Hurricane Isabel hit the area in 2003. Cross said several operators staked out positions at local shelters, working with Red Cross and city officials when power went out and phone lines went down. "We're in the city's emergency plans," he said.

Watson pointed out that not only could amateur TV and radio users aid in responding to the aftermath of a weather disaster; they could even help provide more warning of impending weather. Cross said that while the city of Laurel and Laurel's hospital have already agreed to join in the effort, he hopes to turn it into a regional effort, especially if the repeater provides as strong a signal as he hopes. Assistant City Administrator Martin Flemion, director of the city's emergency operations, said the city has set aside space in its emergency operations center for amateur radio and TV equipment and operators.

"They're a significant enhancement of our response capabilities," he said. "As we found with the tornado in 2001, all our responses use different radio frequencies, so it's hard to communicate between agencies if cell-phone service goes down. This answers that problem."

Suzanne Almalel, spokeswoman for Dimensions Health Systems, which operates Laurel Regional Hospital, said the hospital was more than happy to install the repeater. "It was approved as part of the hospital's emergency preparedness plan," she said. "The hospital felt it would be a big help in the future".

Cross said in addition to the repeater, the clubs will install four radios at the hospital to send and receive broadcasts.
"Until we put it up there, we won't know exactly how far it reaches," he said. "But my guess is that through the repeater, we'll be able to broadcast to most of Prince George's County and maybe Montgomery, Howard and Anne Arundel." "We could provide emergency e-mail from the field," Cross said.

Watson said he hopes the repeater will expand the number of ham operators in the area. "This is going to open up opportunities for old operators and hopefully bring in new folks," he said. "It's going to allow people to get into the video part of this."
Currently, CATS members send video back and forth as a hobby, but also to help each other, Watson said. For instance, one member might record a home repair and send it to someone else who needs to do the same thing. Cross said anyone with a basic camcorder can capture live footage that might be helpful in an emergency. The images could be sent by affordable personal broadcasting equipment, he said.

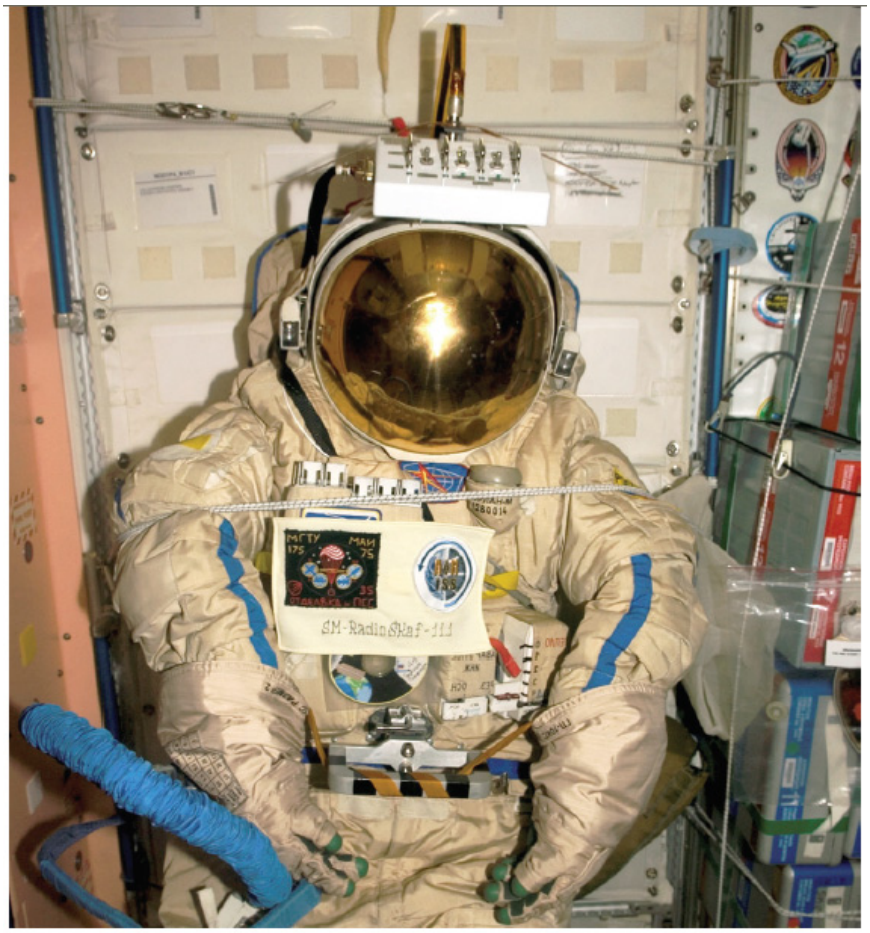
Even better, he said, you don't need special equipment to receive the broadcasts. With a powerful TV antenna, regular users can receive the broadcasts on channels 57 to 59. "This really is a hobby that everyone can get into," Cross said. Anyone interested can call Cross at 301-725-6829 or e-mail Watson at ny3k2004@yahoo.com
…Dan Schwind 02/16/06

# LATEST AMATEUR-RADIO SATELLITE IS NO EMPTY SUIT

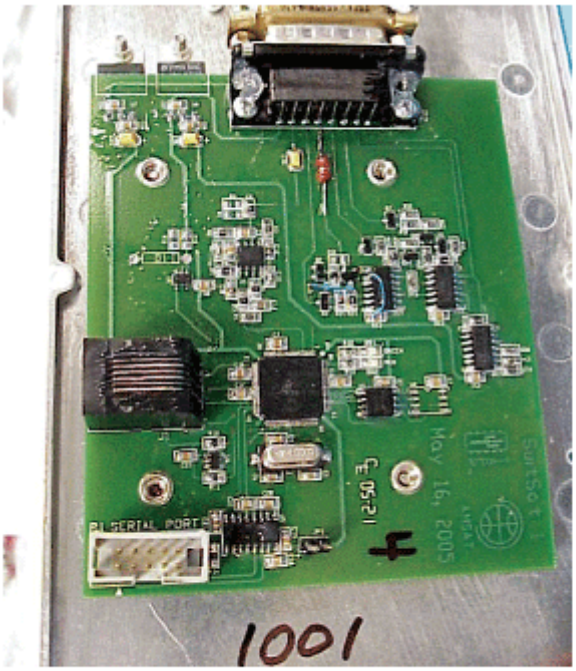
We've all heard references to clueless executives as "empty suits." But the old Russian Orlon spacesuit that crew members tossed out of the International Space Station (ISS) and into freefloating Earth orbit on February 3 was anything but empty. Rather, the event marked the deployment of SuitSat-1, an unusual experiment that has thrilled amateur-radio operators worldwide *(Fig. 1)*.

SuitSat carried an integrated amateur-radio station that transmitted an FM signal on 145.990 MHz. Transmission contents included voice messages recorded by school children from around the world in six languages, a single slow-scan television image, and spoken-English telemetry. The point of the experiment was to give students, teachers, Scouts, amateur radio operators, and the general public an opportunity to track the satellite and participate in this historic event.

The Radio Amateur Satellite Corp. (AMSAT) and the American Radio Relay League (ARRL) sponsored the SuitSat. Lou McFadin, W5DID, and Stan Wood, WA4NFY, led the hardware design team. The station's radio box contained an off-the-shelf Kenwood TH-K2 transceiver. A controller box contained an electromagnetic-interference (EMI) filter, a dc-dc converter to drop the 28-V battery voltage to 12 V, and a controller pc board.



1. SuitSat-1 waits on board the International Space Station to be cast into orbit.




2. Affixed to the lid of SuitSat's controller box, the pc-board controller board carries voice greetings and an SSTV image stored in serial flash memory in adaptive pulse-code-modulation (ADPCM) format. The on-board PIC MCU selects which voice recordings to play back and performs ADPCM decoding.

The latter, designed by Steve Bible, N7HPR, contained a Microchip Technology PIC18F8722 MCU, MCP9800 temperature sensor, and MCP6022 op amps *(Fig. 2)*. The MCU was key to assembly of the voice telemetry messages from phrases stored in 8 Mbytes of on-board serial flash memory. A helmet-mounted switch box and 2-m vertical antenna completed the system.

Cosmonaut Valery Tokarev carried out the final assembly of the suit on board the ISS. He and ISS Expedition 12 Commander Bill McArthur, KC5ACR, stuffed some laundry into the Orlon suit to help it hold its shape. Tokarev then released the suit into space.

Station power was drawn from three 28-V cells built into the suit. The system was expected to have a life of about a week. However, amateur stations were still copying SuitSat transmissions more than 13 days after deployment. But although the TH-K2 was set to transmit at 500 mW, actual power output seemed to be less. According to McFadin, this may be due to a less than optimal antenna.

"The antenna is one that was left over from use as a training model for the ISS ham antenna used on the ISS Service module," says McFadin. "In its intended configuration, there's a metal plate on which the antenna is mounted. This plate serves as the ground plane for a 1/4-wave whip antenna. In this application, there is essentially no ground plane. Thus, the VSWR is probably high. This could account for the low signal level."

So, reception of SuitSat signals required high-gain VHF antennas and mast-mounted preamps. It had been hoped that listeners could hear SuitSat's transmissions with handheld 2-m amateur transceivers and general-coverage VHF scanners, but this was not to be. Nonetheless, SuitSat-1 received an official designation by AMSAT as OSCAR 54 (AO-54).

The moral of the story, says McFadin, is that end-to-end testing should always be a priority. "This project was put together in such a hurry that it wasn't possible," says McFadin. Future SuitSat missions are a distinct possibility. To hear samples of SuitSat transmissions, visit *www.aj3u.com/blog/*
...David Maliniak ED Online ID #12096 March 16, 2006 Reprinted with permission from Electronic Design Magazine.

# HAMFEST CALENDAR

**30 Apr 2006** Athens County Amateur Radio Association http://www.ac-ara.org Talk-In: 145.15 Contact:Drew McDaniel, W8MHV 61 Briarwood Drive Athens, OH 45701 Phone: 740-592-2106 Fax: 740-593-9184 Email: mcdanied@ohiou.edu Athens, OH Athens Community Center 665 East State Street
**18-21 May 2006** Kennebec ARS & 7272 and 1872 Ragchewers Group http://www.ragchewers.net Talk-In: 146.72 Contact: Martin W. Rigoulot, K1PIG 427 Sandy River Road Kents Hill, ME 04349 Phone: 207-293-2393 Email: k1pig@arrl.net Dayton, OH Dayton Holiday Inn Wagoner Ford Road
**19-21 May 2006** Dayton Hamvention / ARRL EXPO 2006 Dayton ARA http://www.hamvention.org/ Talk-In: 146.94 (PL 123) Contact:Jim Nies, WX8F PO Box 964 Dayton, OH 45401-0964 Phone: 937-276-6930 Fax: 937-276-6934 Email: info@hamvention.org Trotwood, OH Hara Arena 1001 Shiloh Springs Road ARRL EXPO info: www.arrl.org/
**11 Jun 2006** Fulton County ARC http://k8bxq.org Talk-In: 147.195/147.795 Contact: Angela Infante, KB2AVN 7649 County Road L Delta, OH 43515 Phone: 419-822-4382 Email: lindsayinf@wcnet.org Tedrow, OH Roth Family Park 131 Hill Avenue
**17 Jun 2006** Milford ARC http://www.w8mrc.com Talk-In: 147.345+ Contact:Chris Reinfelder, KB8SNH 3782 Grovedale Place Cincinnati, OH 45208 Phone: 513-351-2776 Fax: 859-534-4884 Email: kb8snh@fuse.net Milford, OH Eastside Christian Church 5874 Montclair Blvd.
**16 Jul 2006** Van Wert ARC http://www.w8fy.org Talk-In: 146.250 / .850 repeater Contact:Louie Thomas, WD8LLO 208 North Chestnut Street Van Wert, OH 45891 Phone: 419-238-2812 Van Wert, OH Van Wert County Fairgrounds 1055 South Washington Street (US Route 127 South)
**22 Jul 2006** CANCELLED due to construction. Will be back next year! OH-KY-IN ARS http://www.ohkyin.org Talk-In: 146.670 - no PL needed Contact: Phil Smith, KG8AP 86 Riddle Road Cincinnati, OH 45215
**30 Jul 2006** HAMFAIR 2006 Portage Amateur Radio Club http://www.hamfair.com Talk-In: 145.390 - Contact: Joanne Solak, KJ3O/8 9971 Diagonal Road Mantua, OH 44255 Phone: 330-274-8240 Email: ljsolak@apk.net Randolph, OH Portage County Fairgrounds State Route 44

# SATURDAY BREAKFAST

Ahhhhh! The taste of good food and great company. This gathering was at the Breakfast Barn by Ted' s house.

# A PHOTO HISTORY OF ATV MAGAZINES

*The following are excerpts from the ATVQ website,* http://www.hampubs.com/pdf/ATV%20Magazine%20History.pdf..
*The original article appeared in ATVQ Magazine in 1991.It includes some good pictures of past happenings. Maybe if there is interest, I can go back and reconstruct the original article. .That takes us up to 1991. WA8RMC*

### Text by Henry Ruh KB9FO, photo work by Dave Williams WBBZJP

Nothing happens without some earlier effort. As Newton said, "If I've accomplished anything it is because I have stood on the shoulders of giants who preceded me. Likewise ATVQ is a continuation of earlier work by myself as 7 year publisher of Amateur Television Magazine and others who preceded and followed. Here is a photo history and some comments about ATV magazines from the start.

If Hiram Percy Maxim, W1AW, were alive today, he would be a charter subscriber to ATV Magazines and operating ATV mobile! That may shock some of you but think about it for a while. Here are some historical facts which might surprise you. Hiram was an inventor and scientist. Among his early works he built a gasoline powered vehicle with three wheels, invented the silencer for guns and owned a company which produced electrical and aircraft components. He is best known for his efforts to get Ham Radio back on the air after WWI and starting the ARRL. But Hiram was also a charter member, organizer and President of the Amateur Cinema League. With his interests in promoting use of higher frequencies (then 200 meters and down) later the short wave bands, it is easy to conjecture that Hiram, with his interests and inventions in cars, electronics, HF and Cinema, would have combined those interests to become an ATVer! That must be making the anti-ATV folks at the League turn white but it's true!

Early television started on HF. Some of the earliest TV transmissions, using mechanical scanning systems such as the Nipkow Disk were transmitted over existing AM broadcast stations. Later experimental stations operated in the 2-6 MHz. region, transmitted live video up to 600 miles during daylight and further at night. One of the earliest documented TV stations was in Lafayette Indiana at Perdue University.

These "low resolution" transmissions gave way to electronic scanning and use of VHF frequencies. The first known ham TV operator/station was Mel Dunbrack WI BHD, who was given a special authorization to identify as WIBHD-TV. One of only a very few so licensed because the FCC did not have any rules governing TV transmissions when Mel began using his own home brew equipment in the late 1920's, fashioned after the systems used by Baird and others in the commercial TV experiments. No mean feat as devices to make and display TV images were not something you went to Radio Shack to buy!

Mel got the TV Bug early and got several of his friends to build receivers. To get activity started in Ham TV he put out a local newsletter, a single sheet, soliciting ham TV operation. To the best of my knowledge, this is the first effort to organize and publish an ATV newsletter. Mel is still active on ATV today and it's been his life long favorite mode.

**FIRST ATV Publication June 1962-November 1964.** *Commercially organized A TV publications started with another Mel. Mel Shadbolt W0KYQ of Dakota City, Nebraska and Wayne Green W2NSD, as respectively editor and publisher started ATV EXPERIMENTER and the first issue was June-July 1962.* The publication lasted three years and 18 issues, 17 of which are pictured on the following page, although all 18 issues are in my collection. Wayne Green was just starting his ham Publication 73 Magazine at this time and had ideas of several special interest publications covering RTTY, ATV etc. Mel Shadbolt eventually started a company called ATV Research, today known as Century 21, and still operates from 130 Broadway, Dakota City, NE.

In these early days, transistors had just become available (Remember the CK721, CK722,2N35 etc?) and although you could buy a TV set, getting a camera was a little more difficult. Many of the early articles were concentrating on BUILDING your own camera, with articles on lenses, pick-up tubes, deflection coils, monoscopes, flying spot scanners and other early imaging devices. The first public service ATV activity noted was the March Of Dimes fund drive. The activity was provided by the LaGrand, OR, ATV hams, Fred K7KRP and Marvin W7LWM, Vie W7ZTC. The signals fed into an early CATV system feeding 2800 homes.

Among other efforts documented was a petition b, Wayne Green W2NSD which asked the FCC to permit narrowband ATV (1 MHz. bandwidth) to be allowed to operate on 6 and 2 meters which were at that time largely vacant! The main resistance was from Columbia Broadcasting (CBS) which feared interference to TV channel 2.

*Early operations were crude by today's standards and required a good level of technical competence.* Everything was built from scratch or heavily modified. Early transmitters used a 6AF6 which might manage 2 watts on a good day. Having 60 watts from a converted military 420 MHz. transmitter was considered high power.

There are accounts and photos of early DXpeditions to mountain tops and other portable stations. Listings in each issue provided a growing list of ATV stations in all pans of the country and Canada. By Volume 3 #2 there was activity noted in every populous area of the US with NY, CA, FL, OH, IL, IN, Ml, VA, PA, NJ, CT, TN, IA, TX, OR, WA, AL, NM, MT, MD leading the pack.

The magazine also showed the early VKR500 linear track VIDEO TAPE RECORDER, with, later, a user/builder report by Mel Shadbolt, the first documented home VCR owner! For those who only know VCR's as Beta or VHS, this first attempt at a home VTR was based on using high speed and long reels of l/4" "audio" tape. By today's standards it was nothing to write about, but back in 1964, it was plenty good enough to even get a picture to record and playback.

At the end of three years many hams who would also become famous had appeared in its pages. Ralph Taggart WA2EMC, (now WB8DQT) later to be a pioneer in SSTV, digital and WX sat provided a low noise UHF preamp using 6CW4 nuvistor tubes. Vanguard Labs who today sell WX sat equipment, Denson Electronics, who's owner, Al Denson was an ATV'er sold industrial TV equipment to schools and business also advertised his goodies in ATV Experimenter. Others in early issues included Don Miller WSNTP and his wife Sue WSCNW (now WSYL) of Wyman Research today and an SSTV pioneer, Al Lipkin W3AEH, later to be part owner of A5 Magazine, Bill Parker W8DMR who also had articles in Radio Electronics on building your own TV equipment. SSTV was mentioned with OSCAR Ill, as Don WSNTP and Bob W7FEN prepared to make the first space relayed ham TV contact using SSTV.

**September 1967-July 1970.** You can't keep a good mode down! the second commercial venture was A5 Magazine an effort by Donald Lxwine WB2UMF and Martin Balk W2SZW both of New Jersey. Eighteen issues were published.

Technology advanced quite a bit during the three years between the end of ATV Experimenter in 1964 and the start of A5 in 1967. SSTV had gotten off to a good start and had advanced beyond the STA stages. OSCAR was a new exciting mode and the introduction of the first microprocessor IC. Video equipment was becoming available at reasonable prices as surplus.

A5 concentrated on SSTV theory and operation. Although there was some coverage of FSTV. One cover photo showed a mobile ham TV station with an open chassis tube camera mounted on a tripod inside a convertible car. Another "new comer" broke ground in the July 1968 issue as HAM RADIO MAGAZINE made its debut.

Emphasis was still on home brew equipment including cameras, converters and modulators. Most were still using tubes although transistors started taking over by issue 12. This issue, July 1969, also featured an ad by a new company destined to become the premier source of ATV equipment, P. C. Electronics aka Tom O'Hara W60RG.

The first IC circuit was a utility amplifier based upon an RCA CA3020. Its purpose was to provide some video gain to make up for "low camera output and long cable losses ". Readers were still treated to sources for home brew parts especially tubes, cameras and emerging video recorders.

The publications to this point were all in the older small magazine format of 8 x 5 inches. Most issues were 12-16 pages and no color was used. It was obvious these were no "QST's" but the amount of effort to even put out these little issues was far beyond the small income they produced. A5 ceased after the July 1970 issue (#18) and the authors, recently having obtained their FCC commercial radio telephone operators licenses, concentrated on college classes and life.

The first issue of the next publication alludes to the existence of an issue #19 by indicating it would be #20 under the old numbering system, but searches have not turned up any such issue. If anyone has an issue #19 copy and would like to send it to me or send a copy I would appreciate it.

Yet another pair of hams attempt to bring ATV out of obscurity. May 1972-April 1970. With the popularity of SSTV rising quickly and three manufacturers producing SSTV equipment, ham TV was much better known by 1972. Although UHF operation was still not as simple and easy as today, at least you could buy cameras and equipment. SSTV was expensive to operate with special SSTV cameras and P-7 monitors, but work was afoot to generate solid state scan converters and new technology was present everywhere.

In May 1972, almost two years after the demise of A5, Ron Cohen K3ZKO and Al Lipkin W3AEH made arrangements to restart A5. By the second issue this had changed to A5 Amateur Television Magazine although nearly everyone who remembers the issues first hand, it remained A5.

Ron and Al are ham buddies in Philadelphia. They spent a great deal of time to produce a publication which had a more professional look and feel. Layout and art work improved. Only 12 issues were published but it was much more widely known to hams than previous efforts. The issues even sported colored paper covers and grew to as much as 44 pages.

The issues were printed and assembled in the basement of their homes. The appearance improved much over previous efforts. Circulation increased as well as the inclusion of "high class" ads from major ham equipment manufacturers. We saw the debut of RPT Magazine in the July 1972 issue. The emphasis was on modifying commercial FM 2-way equipment to ATV operation. The Motorola T44, RCA CMU15, Link 2375, and GE hardware from FM surplus dealers made it cheap and easy to get on ATV. A

few simple mods and the addition of a video modulator made most of these earlier radios video transmitters. Plus you had the built in NBFM sound capability of the original radio!

On the SSTV scene were the first color SSTV transmissions using field sequential techniques, Robot equipment had dominated the market with more from Venus Electronics. Don Miller WSNTP and others were busy experimenting with different color SSTV systems including the Land 2 color system and beginning to talk about other scan rates and schemes including “medium scan” and “sampledot” both forerunners of telco tv efforts.

The September 1973 issue noted the formation of ATV club in Canada and another in Washington, D. C. The latter, started by Terry WB4JFI. Mike WB4DVD. Paul WB4KCM and Bruce WB4YTU, was destined to be a major player in the future of ham TV. Also a new source of surplus equipment was being provided by a small company in Michigan, Communications Unlimited. Together, Metrovision ATV Club and C. U.‘s owner WBSHEE (now KBSFOI would later lead the ATV charge in Washington to save the fast scan mode from the ARRL and government efforts to banish it to oblivion!

Power levels of some of the hardware started to become high enough that articles began to include warnings about the dangers of high voltage and UHF RF. It was now fairly common to use a 4CX250 or a pair in the K2RIW 440 MHz. design amplifier for ATV. This provided as much as 400 watts of video RF, more if you were brave enough to run the tubes to the limit. Printed was the concern for UHF energy being biologically harmful. Well, an RF burn always hurts! But the concern was also that just radiated power, either from the chassis or from the gain end of the array on the roof could be biologically harmful. Microwave ovens had just been invented which used the “water line” a resonant frequency of the molecule $H_2O$ to cause molecular excitation (heating) and thus cook food. This caused early concern about other frequencies. The main worry was the human eye and cranium were susceptible at 450 MHz.

Robert Suding W8LMD wrote of his digital SSTV converter in the March 1974 issue. Also a landmark in technology was featured on the front cover, WR4AAG, the first licensed fast scan in-band ATV repeater! Ron and Al also had booth or display space at hamfests all over the east and midwest. This public showing of ATV increased awareness and popularity of the mode greatly. But this also caused concern in Newington as the FM mode began to take over the VHF-UHF bands. The political wars were about to start and ATV was the “cannon fodder” the League was going to use to promote FM mode.

Ron and Al ended their efforts with a very late March 1974 issue and the magazine might of ended there except for yet another ATV fan and equipment dealer, Henry Ruh WB8HEE (today KB9FO)!

During the early 70’s the FM mode grew quickly. Efforts to organize ana’ slow the growth were made by the ARRL and the FCC by ways of new regulations which restricted FM repeaters. During 1972 and 1973 several new rules were proposed and put in place which restricted repeaters. The thought was that only FM mode would use a repeater! In 1973 Henry Ruh KB9FO and 10 others by Wayne Green W2NSD assaulted the restrictive rules. ZKs included testimony before the Commission in Washington The Rules were proposed and promoted by the ARRL who feared growth of FM would cause chaos, neglecting, as usual, that hams are self regulating, even though it wasn‘t easy. Repeater councils and coordination groups formed and eventually most of the growth problems were ironed out without the help of the ARRL or the FCC. Just hams trying to co-exist. But an out growth of this was also the idea that repeaters could be used for other modes including ATV! The end result was we finally got most of the repeater ruler repealed and kt self rule and common sense take over.

**January 1975~February 1985.** The publication of Amateur Television Magazine represented the longest continuous effort to produce an ATV only publication. It also provided a special interest group with yet another series of improvements in the quality of an ATV magazine and broke new ground in many areas.

In December 1974, Henry Ruh, then a subscriber of and an advertiser in A5 Magazine was worried that there had not been an issue since March. Contacting the former owners proved that they had indeed ceased publication and yet another ATV publication had died. Henry made arrangements to meet Ron and Al in a Howard Johnson’s restaurant in Pennsylvania. The result of that meeting was that Henry would start a new publication and gain the rights to the name A5, the use of the A5 Logo, and the mailing list. Also the typewriter and home made saddle stapler changed hands. Ron and Al would be listed as contributing editors but in fact the effort was all Henry’s.

January brought the first issue which sported for the first time a glossy paper stock, and higher quality interior white stock. The cover featured a live photo of the WR4AAG ATV repeater with Bruce Brown WB4YTU, Terry Fox WB4JFI repeater builders. Subscribers of the defunct a were informed that their subscriptions would be honored even though none of the funds were available to the new publisher. The magazine was funded by Henry’s electronic store business but this didn’t last long as the recession soon forced the doors closed at CU. The lack of income the first year was particularly hard since there were also nearly no renewals, only some new subscriptions and the financial base was eliminated by May of 1975.

The new publication almost died again at that point but Henry went back to work in Broadcasting, first in Los Angeles, then Topeka, then Bloomington, IN. The magazine had sported new efforts to make it more viable as an entity in and of itself. These included a cartoonist who added humor to the publication from Henry's ideas, and an effort to remain at about 50 pages per issue on good paper stock. The last two issues of the year were printed and mailed at almost the same time and did not represent as good an effort as earlier issues of the year. But circulation was rising, and a lower cost printer had been found in Topeka.

The early days of "desk top" publishing were hard. There were no cheap home computers, printers or word processor programs. Everything was typed by hand, many timer over, in an attempt to rid as many typographical and spelling errors as possible. But still many got through. l')ping SO pages several times per issue was not fun.

Everything came back together in early 1976. Mailing was done by hand until the subscription list had grown to over 1000 at which time a commercial mailer was given the job. By November 1976 subscriptions had grown to 1699 and total circulation to 2100 per issue. Renewals and new advertisers had brought needed cash flow to the magazine and by January 1977 the personal subsidy of its financial operations had decreased to an annual tide it through level. Subscriptions were concentrated at the beginning of the year and there were not enough renewals for the last three issues to have a positive cash flow year round. 1976 Also started a couple of significant points in ham radio history. The preparations for the 1980 WARC were begun and. Henry took active participation in the Washington, D. C. meetings. At the same time the FCC/ARRL were trying to eliminate ATV by rules changes at the same time that Bruce Brown was operating his ATV repeater on a continuing series of STA's.

Near constant efforts were made to achieve three objectives: A) get the FCC to change the rules so that an ATV repeater could be built and operated m the 420-450 MHz. band anywhere in the country; B) prevent the ARRL/FCC from passing docket 20777 which would have eliminated ATV operations from the 450 MHz. band by bandwidth restrictions to only 35 KHz. maximum and; C) make a convincing argument that the ham bands should be saved from commercial interests, especially the 450 Mhz band.

As history has shown, we did it! Not only did we not lose the 450 MHz. band, except for the A Line along the Canadian border, but we gained the 900 MHz. band, got three new HF bands, although there were losses in the SHF and microwave spectrum. Being a presence in Washington and having a reasonably decent magazine helped form an image of strength in numbers before the FCC and ARRL, who relied in part on ATV activity to justify the continuation of the 30 MHz allocation at 420 MHz.

After some real knock-down battles between the various parties, ARRL, FCC, Bruce Brown, Metrovision, Henry Ruh, Amateur Television Magazine, we got the rules changed to allow ATV repeaters in-band on 420-450 MHz. A permanent rules change allowed ATV repeaters to operate outside of the allocated FM repeater sub-bands but not within the CW or weak signal sub-bands, or by local coordination efforts which were recognized to pre-exist in some instances, especially in southern California where ATV operated on 434 MHz.

Coverage now was good in both ATV and SSTV areas. Emphasis was still on build it projects and a regular SSTV column by Dave Ingram K4TWJ began. Dave would go on to write many ham technical books for TAB as well as for other, bigger magazines in the years to come.

A fully type-set issue made things look good and material on many subjects was pouring in. All in all it seemed the age of ATV had begun. Amateur Television Magazine switched to the larger 8 x 11 inch format with the January 1979 issue. This provided much more room for diagrams, and the old method of typing on an 8 x 11 page then having it reduced to fit the 8.5 x 5.5 page was eliminated making reading a lot easier. The magazine continued to grown in size and circulation as time passed and actually began to show a positive cash flow and modest profit which must have been a landmark in itself for ATV publications.

In 1979 a new SSTV'er, Mike Stone WBQQCD stopped by after a hamfest in Bloomington, IN. He was mostly curious about the aluminum "Christmas Tree" on a 100' tower in the yard of KB9FO that had among many other antennas: 4, 48 element J-Beam 450 MHz. antennas! Mike was a general class ham and had worked a little slow scan on 10 meters. He was shown the ATV shack of Henry's which was well equipped at the time with broadcast equipment. Mike would later begin to make regular contributions to the magazine on the topic of SSTV.

March 1980 issue of Amateur Television Magazine sported a full color cover, and for the first time a full color ad, part of a two page spread by Robot to announce their new 800 SSTV system. Mike WB0QCD also started as a regular SSTV column writer. Under Henry's editorial and publisher guidance, the magazine also was providing recognition to efforts by ATVers. It started with a story about Warren Weldon WD8FU's weather watching tower mounted camera and his ATV link to the National Weather Service in Tulsa, OK. This was sent to the White House. Jimmy Carter, President of the United States responded with a letter to Warren commending him on his efforts.

Having inherited some old pull-out image orthicon tubes I came up with the idea of a Good Image Award for public service. This became an annual award with the first going to Warren Weldon. Other recipients included the JPL for its N6V Viking probe video of Mars ATVISSTV efforts. All the awards were to promote ATV activity, home construction and public service.

Another award was the Master Scanner award. It was a nice desk top plaque for outstanding technical articles published during the year. The first was awarded to Takao Yabana JABBZC for his $100 solid state SSTV scan converter. Also offered was the SSTV operator of the year. The first recipient was Dave Guthrie 5N0DOG of Logos, Nigeria. Dave later returned to the USA.

In the summer of 1981, Amateur Television Magazine was sold to Mike Stone WEQQCD. The magazine had managed to show a modest profit and life's challenges were increasing for Henry as he quit his 6 year long job at Indiana University in order to seek fortune as a broadcast consulting engineer and build his own FM broadcast radio station. With an increase in family responsibility with wife and son, and the increased demands of self employment, time for ham radio and the publication grew shorter and shorter. The decision to sell the business to Mike would later turn out to be the nadir of ham TV, but for a while it helped ATV and wm the only alternative to ending yet another good ATV magazine venture, albeit on the upside for once.

With a publisher who had little else to do but promote the magazine and operate HAM TV, the magazine grew as expected. In 1982, as the FCC announced it would accept a rules change proposed by Henry Ruh KB9FO to allow SSTV in the general class portion of all HF bands, the magazine went to monthly publication. This was also in part to support its publisher who had quit regular employment and was trying for the first time, to make a living off the income derived from an ATV publication.

The extra issues per year meant more advertising dollars per year, although partially eroded by mailing and printing costs. The publisher also began to offer a lot of subsidiary items, computer programs, SSTV audio cassette tapes, video tapes and booklets of collections of past ATV Magazine articles. These anthologies provided additional income and the extra work involved could have only been done by someone with nothing else to do.

Earlier issues under Henry provided a complete TVRO series, way before any other magazine printed a word about satellite TV. Likewise, in 82 & 83 a new series of build it yourself TVRO articles appeared before the other media bothered with the subject.

Feeling the economic pinch of supporting his family, his ATV repeater, his ham radio hobby and publishing a monthly magazine, Mike came up with the marketing ploy of forming the USATVS. In January of 1983 it was cover material for the issue. Representatives were appointed by Mike, and some never knew it until they read about it in the magazine. The multi-page promotions began early and continued, espousing the virtues of this one man society and marketing arm of the magazine.

By 1984 the publication got farther and farther away from ATV/SSTV with articles on FAX, RTTY, satellite/OSCAR, and other modes. The creation and promotion and production of thousands of "Hamfest" board games was the economic turning point for the publication. Facing a huge inventory of the slow selling item, the pressure was on to make money with the publication. Expanded sales pitches for "USATVS buying service" and computer programs, tapes, cassettes etc. filled the pages. The amount of ATV material decreased and the other topics began to take over.

The last issue of Amateur Television Magazine was February 1985. The next issue was titled Spec-Corn. It was explained that it would be a magazine to cover many special interest communications modes. Thus it ended yet another ATV Magazine.

In early 1988 Bill WBBELK and Henry KB9FO were contacted by several ATV'ers, a couple of ham radio magazine editors and some ATV equipment manufacturers asking if they would please start another ATV publication. Only after meeting for the first time at Dayton 1988 did ATVQ take form.

A new ATV publication, Amateur Television Quarterly Magazine, was born in 1988. A group of ATV'ers, manufacturers and other interested persons spoke informally throughout the Dayton hamfest. The result was the formation of ATVQ by Bill WB8ELK and Henry KB9F0, in July of 1988. Our goal was and is today, to provide a high quality technical publication for ATV.

The first issues of ATVQ as the magazine quickly became to be known were published in the latter half of 1988. Issues were called Summer and Fall 1988 (Volume 1 #'s 1 & 2). Only a limited number of copies of each were printed and they were done as an announcement of a new effort to bring out a new ATV magazine. Proud owners can claim a first edition! These two starter issues were small format. Just enough to raise the issue of whether anyone had an interest in an ATV only magazine.

The response was a tidal wave of positive response. Advertisers quickly responded and subscriptions sold briskly. I had remembered the older FM mode magazines, FM, RPT, and others who had a much larger operator base, but couldn't attract enough subscribers. We were blessed with the immediate supply of complete sales lists from advertisers, ATV club rosters, and Bill and I went through our log books to make a mass mailing list. When done we collected over 3500 known ATVers. This has since grown as more clubs sent in their entire membership rosters and requesting sample copies sent to members.

And as they say, the rest is history! Pictured are the covers of all issues to date. Among other highlights, every issue has had a full color cover, many interior pages have been full color and we recently changed from newsprint to white stock for interior pages. Each issue has had improvements including changes in layout, photo work, and editing. The paid staff has grown to include

regular typists to enter the contributed articles, a sales manager Pamela Dass formerly of 73 Magazine, and Dave Williams WBQZJP as photo editor.

The growth and expansion of ATVQ, which included issues of 104 pages, 96 pages, also takes its toll in eating up material. ATVQ has budgeted on a 68 page format and is constantly on the search for new material. In case you didn't notice, ATVQ pays for technical articles! You also get the satisfaction of being published in the LEADING ATV magazine in the world! ATVQ's high quality full color issues inspire news stand sales at electronics outlets These single copy sales generate new awareness and good images of ham TV operation.

In case you hadn't noticed, Bill and I have now been to 49 states, 6 provinces in Canada and 5 foreign countries gathering ATV activity news and promoting ATV activity. Our thanks to everyone that contributed to ATVQ's progress and success over the past three years. We appreciate your continued support for the years ahead. Bill WB8ELK and I do ATVQ because of our love for the Ham Radio hobby and especially ham TV. We both work full time jobs, Bill as editor of 73 Magazine and I as engineering manager for the world's largest video duplicator (100 million + copies a year!). A good portion of our spare "ham time" is used to put together each issue, service subscriptions and advertisers. We are happy to do this at no pay as a service to our ham radio hobby which has enriched our lives and family. We do this for the fun. Let us keep it that way.

**OK, that takes it to 1991. Does anyone wish to carry it farther? After all, Gene Harlan who now publishes ATVQ deserves a round of applause (throw money too) for his efforts since Henry turned it over to him. Let's bring it up to date!!! ... WA8RMC.**

# FOLLOW TOM, WA5KUB, TO THE HAMVENTION ON ATV!

I'm sending this to you because many of you watched us over the past few years and wanted to take part again. Can you please pass this on at your club meetings or put it on your websites with a link to the streaming cam? We had hundreds of hams thank us last year for bringing them to Hamvention even when they could not actually attend in person. It was a lot of fun.

It's back for the 4th year! Streaming video and audio from Hamvention 2006 http://wa5kub.com <http://wa5kub.com/> "This will be our 4th year to broadcast live video of our drive to Hamvention (550 miles) and then the 3 days outside in the fleamarket. This year the helmet cam is back. It will let people around the world get a view of all the things we look at as we walk around.

The streaming cam page also has its own chat room and hams from around the world watched, chatted, and enjoyed it the past 3 years.

There are no pop-ups or advertisements. Just something we like to do each year and have fun. It lets hams take part in ham radio if they are too far away to travel or health does not permit it.

Below I have included some information regarding our schedule and the link that people will need to access in case you will put a link on your site. Please spread the word to other hams and ham clubs. The more people we have on, the more fun we will have.

**Streaming Webcast Schedule:**
We will be broadcasting from the beginning until the end of the show each day Friday May 20th through Sunday May 22th from our outside fleamarket spaces 3350-3351. ***(ATCO will be at 3037, 3038 and 3039. Maybe they will stop by and chat)*** Please come by and say hello and wave to your loved ones back home. The "Helmet Cam" will be back again this year. You will be able to see what we see as we walk around in the fleamarket.

Also watch for us as we convoy from Memphis, Tn to Dayton, Oh. on WEDNESDAY May 17th and set up our fleamarket space on Thursday May 18th.. This is a 550 mile drive and will take us about 10 hours. We will depart Memphis about 8:00 am CST and arrive Dayton about 7:00 pm EST. This will be our fourth year to broadcast the drive live. Chat with us on the chat screen as we drive. Hams from around the world followed our trip and chatted with us last year. Watch us and try to guess where we are. After Hamvention, we'll broadcast our drive back home. Watch for us Sunday May 21 from about 1 pm till about 9 pm CST.

The link is http://wa5kub.com <http://wa5kub.com/>
The site is up and running today and will be on 24 by 7 from now until Hamvention. Please visit it, log in and chat with us and others as we test it. We need you to help stress test it. We have recorded video running on it at the present but will switch over to live video when we start our trip. Video clips running now are the Tonight show CW vs text messaging, news clips of us from local tv stations, The Hamband (A video of a ham in a tux and top hat singing a ham song while hanging on his tower at 100 feet, Storm chaser videos, and ICOM videos that were taken at Hamvention over a couple years.

Thanks, Tom WA5KUB

# NELSONVILLE HAMFEST

The Nelsonville Hamfest is always great but this time, because I found stuff I wanted, made it extra special. The quality of any Hamfest is directly proportional to the stuff one finds.

Many times I comer home from a Hamfest wondering why I even took the time to go. Well, in those cases, I didn't buy anything. Go figure!

If you have never gone to this one, I recommend it. It's small, only about 200 people total I guess, but our group always prevails as being the largest group there. It's kinda like a mini spring/fall event without the food.

In any case, just look at the smiles on everyone's face…we had a good time!
…WA8RMC

# ATCO

*2005 SPRING EVENT*

1:00 PM - SUNDAY

MAY 7, 2006

ABB PROCESS AUTOMATION

CAFETERIA

579 EXECUTIVE CAMPUS DRIVE

FOR MORE DETAILS, CONTACT

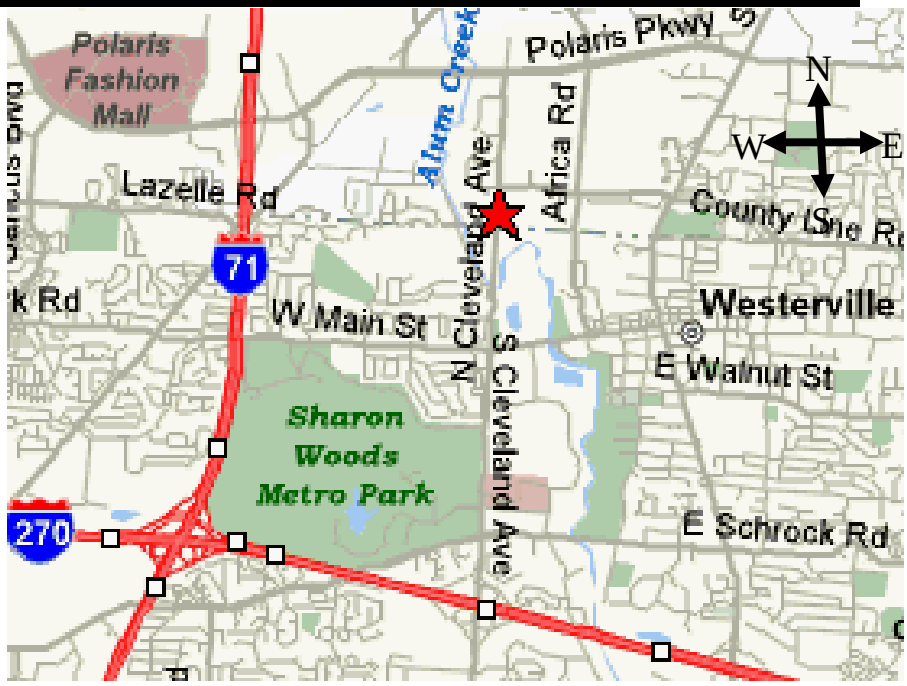
ART - WA8RMC 891-9273

LUNCH PROVIDED - DOOR PRIZES -

BRING A FRIEND AND SEE OLD BUDDIES

MINI HAMFEST - SHOW AND TELL

**DIRECTIONS TO THE ATCO EVENT**




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

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

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

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

# LOCAL HAM CLUB LISTING

| Club/Organization | Web Site | In Person Meetings See the Club's Web Site for Location | Nets | ARRL Affliated ? |
|---|---|---|---|---|
| ARC OF OHIO STATE UNIVERSITY | http://arc.org.ohio-state.edu/ | 2nd Mon of the month at 18:00 | | Y |
| ATCO-AMATEUR TELEVISION IN CENTRAL OHIO | http://www.atco.tv/homepage/index.htm | | Tue's at 21:00 on 147.450 | |
| BUCKEYE BELLES-OHIO LADIES AMATEUR RADIO CLUB | http://geocities.com/kc4iyd | | Mon's at 09:00 on 3.945<br>Mon's at 21:00 on 147.060<br>Tue's at 20:00 on 3.972<br>Tue's at 20:30 on 7.236 | |
| CCRA-CAPITAL CITY REPEATER ASSN | http://www.qsl.net/ccra/ | 2nd Sat of the month at 19:30 | Mon's at 20:30, the Swap'n'shop Net on 147.24; followed by a Discussion Net | |
| CENTRAL OHIO SLOW SCAN TV | http://www.qsl.net/n8tut/sstv/ | | 1st Sun at 19:00 on 145.490 | |
| COARES-CENTRAL OHIO ARES | http://www.coares.org/ | 3rd Wed of the month at 20:00 | Wed's at 20:00 on 147.060 except the 3rd Wed of the month. | Y |
| COLUMBUS FOX HUNTERS | http://www.qsl.net/cfh/ | | | |
| COOKEN-CENTRAL OHIO OPERATORS KLUB EXTRA TO NOVICE | http://www.cooken.org/ | 2nd Sat of the month at 12:00 | Wed's at 20:30. See web site for details on fregs. | Y |
| CORC-CENTRAL OHIO RADIO CLUB | http://www.corc.us/ | Check web site | | |
| COSHOCTON COUNTY AMATEUR RADIO ASSOC. | http://www.w8cca.org/ | 1st Tue of the month at 19:00 | Sun's at 21:00 on 147.045 | |
| COSWN-CENTRAL OH SEVERE WEATHER NET | http://www.severe-weather.org/ | | Tue's at 19:30 on 146.76 PL of 123.0hz Spring & Summer;<br>3rd Tue's Fall & Winter | Y |
| COTN-CENTRAL OHIO TRAFFIC NET | http://www.technology-corner.com/cotn/ | | Daily at 19:15 on 147.240 | |
| CQRP-COLUMBUS QRP CLUB | http://www.qsl.net/cqrp/ | 1st Sat of the month at 10:30 | | |
| CRES-ARC | http://www.qsl.net/w8zpf | Check web site | Sun's at 21:00 on 146.070 | Y |
| DELARA-DELAWARE AMATEUR RADIO ASSOCIATION | http://www.k8es.org/Home.html | 3rd Wed of the month at 19:30 | Mon's at 20:00 on 145.17 | Y |
| LANCASTER & FAIRFIELD CTY ARC | http://www.k8qik.org/ | 1st Thu of the month at 19:30 | Mon's at 21:00 on 147.030<br>Thu's at 18:30 on 147.030 is Radio Night. | Y |
| LICKING COUNTY ARES | http://www.licking-ares.org/ | | 1st & 3rd Wed of the month at 21:00 on 146.88 | |
| MOUNT VERNON ARC | http://mvarc.net/ | 2nd Mon of the month at 19:00 | | Y |
| NARA-NEWARK AMATEUR RADIO ASSOCIATION | http://nara.eqth.org/ | 2nd Sat of the month at 19:00 | Tue's at 21:00 on 146.88 | Y |
| OHIO NAVY-MARINE CORPS MARS | http://www.ohionavymars.org/ | | | N/A |
| QCWA MID-OHIO CHAPTER | http://www.qcwa.org/qcwa212/ | Check web site | Thu's at 20:30 on 146.76 | |
| RUSTY ZIPPER HF & DX CONTEST CLUB | http://www.qsl.net/na8kd/ | | | |
| SOUTH WEST COLUMBUS HAM RADIO CLUB | http://swchrc.com/ | | Fri's at 21:00 on 145.230 or 53.550 | Y |
| VOICE OF ALADDIN ARC | http://www.qsl.net/w8fez/ | | | Y |
| ZARC-ZANESVILLE AMATEUR RADIO CLUB | http://zarc.eqth.org/ | 1st Tue of the month at 19:00 | Wed's at 21:00 on 146.610 | Y |

# INTERNET ATV HOME PAGES (list verified 04/15/06)

If you have access to the INTERNET, you may be interested to know of some of the HAM related information that is available. Most addresses listed below are case sensitive, so type exactly as shown.

## 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://www.qsl.net/atn | California, Amateur Television Network in Central / Southern |
| http://members.tripod.com/silatvg | Illinois, Southern, Amateur Television group |
| http://www.ussc.com/~uarc/utah_atv/id_atv1.html | Idaho ATV |
| http://www.kcatv.org | Kansas, Kansas City Amateur TV Group (KCATVG**)** |
| www.bratsatv.org. | Maryland, Baltimore Radio Amateur Television Soc. (BRATS) |
| http://www.dxzone.com/cgi-bin/dir/jump2.cgi?ID=10991 | Michigan, Detroit Amateur Television System (DATS) |
| | |
| http://www.qsl.net/kd2bd/atv.html | New Jersey, Brookdale ARC in Lincroft |
| http://www.ipass.net/~teara/menu3.html | North Carolina, Triangle Radio Club (TEARA) |
| http://www.oregonatv.org | Oregon, Portland OATVA Oregon Amateur TV Association |
| http://www.jones-clan.com/amateur_radio/klamath_amateur_television.htm | Oregon, Southern Oregon ATV |
| http://www.nettekservices.com/ATV/ | Pennsylvania, Pittsburg Amateur Television |
| http://members.bellatlantic.net/~theojkat | Pennsylvania, Phila. Area ATV |
| http://www.hats.stevens.com | Texas, Houston ATV (HATS) |
| http://www.hotarc.org/atv.html | Texas, WACO Amateur TV Society (WATS) |
| | |
| http://www.ussc.com/~uarc/utah_atv/utah_atv.html | Utah ATV |
| http://www.qsl.net/w7twu | Washington, Western Washington Television Soc. (WWATS) |
| http://www.shopstop.net/bats/ | Wisconsin, Badgerland Amateur Television Society (BATS) |
| | |

## Foreign homepages

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

# TUESDAY NITE NET ON 147.45 MHz SIMPLEX

Every Tuesday night @ 9:00PM WA8RMC hosts a net for the purpose of ATV topic discussion. There is no need to belong to the club to participate, only a genuine interest in ATV. All are invited. For those who check in, the general rules are as follows: Out-of-town and video check-ins have priority. A list of available check-ins is taken first then a roundtable discussion is hosted by WA8RMC. After all participants have been heard, WA8RMC will give status and news if any. Then a second round follows with periodic checks for late check-ins. We rarely chat for more than an hour so please join us if you can.

# ATCO REPEATER TECHNICAL DATA SUMMARY

Location: Downtown Columbus, Ohio
Coordinates: 82 degrees 59 minutes 53 seconds (longitude) 39 degrees 57 minutes 45 seconds (latitude)
Elevation: 630 feet above average street level (1460 feet above sea level)
Transmitters: 427.25 MHz AM modulation, 1250 MHz FM modulation, 1260 MHz QPSK digital, 2433 MHz FM modulation and 10.350 GHz FM modulation
Interdigital filters in output line of 427.25, 1250 & 2433 transmitters
Output Power - 427.25 MHz :40 watts average 80 watts sync tip
1250 MHz: 50 watts continuous (Analog ATV)
1260 MHz 2 watts continuous ( DVB-S digital ATV 2 channels)
2433 MHz: 15 watts continuous
10.350 GHz 1 watt continuous
Link transmitter - 446.350 MHz 5 watts NBFM 5 kHz audio
Identification: 427, 1250, 1260, 2433, 10.35 GHz xmitters video identify every 30 min. with ATCO & WR8ATV on 4 different screens
1260 MHz - Continuous transmission of ATCO & WR8ATV with no input signal present
Transmit antennas: 427.25 MHz - Dual slot horizontally polarized "omni" 7 dBd gain major lobe east/west, 5dBd gain north/south
1250 MHz - Diamond vertically polarized 12 dBd gain omni (Analog ATV)
1260 MHz - Diamond vertically polarized 12 dBd gain omni (Digital DVB-S ATV)
2433 MHz - Comet Model GP24 vertically polarized 12 dBd gain omni
10.350 GHz - Commercial 40 slot waveguide horizontally polarized 16 dBd gain omni
Receivers: 147.45 MHz - F1 audio input control of touch tones
439.25 MHz - A5 video input with FM subcarrier audio (**lower sideband**)
915 MHz - F5 video link data from remote sites
1280 MHz - F5 video input or DTV-S digital (digital input fed direct to 1260 MHz digital output channel 2)
2398 MHz - F5 video input
10.350 GHz - F5 video input (future – not installed yet)
Receive antennas: 147.45 MHz - Vert. polar. Hi Gain 12 dBd dual band (also used for 446.350 MHz output)
439.25 MHz - Horiz. polar. dual slot 7 dBd gain major lobe west
915 MHz - Diamond vertically polarized 12 dBd gain omni
1280 MHz - Diamond vertically polarized 13 dBd gain omni
2398 MHz - Comet Model GP24 vertically polarized 12 dBd gain omni
10.450 GHz - Commercial 40 slot waveguide horizontally polarized 16 dBd gain omni ( not installed yet)

| Input control: | Touch Tone | Result (if third digit is * function turns ON, if it is # function turns OFF) |
|---|---|---|
| | 00# | turn transmitters **off** (exit manual mode and return to auto scan mode) |
| | 00* | turn transmitters **on** (enter manual mode-keeps xmitters on till 00# sequence is pressed) |
| | 264 | Select Channel 4 Doppler radar. (Stays up for 5 minutes) Select # to shut down before timeout. |
| | 697 | Select Time Warner radar. (Stays up till turned off). Select # to shut down. |

| Manual mode functions: | | |
|---|---|---|
| | 00* then 1 Ch. 1 | Select 439.25 receiver - manual mode (hit 00* then 1 to view 439.25 signal only) |
| | 00* then 2 Ch. 2 | Select 915 receiver - manual mode |
| | 00* then 3 Ch. 3 | Select 1280 receiver - manual mode |
| | 00* then 4 Ch. 4 | Select 2411 receiver - manual mode |
| | 00* then 5 Ch. 5 | Select video ID - manual mode (the 4 identification screens) |
| | 01* or 01# | Channel 1 439.25 MHz scan enable (hit 01* to scan this channel & 01# to disable it) |
| | 02* or 02# | Channel 2 915 MHz scan enable |
| | 03* or 03# | Channel 3 1280 MHz scan enable |
| | 04* or 04# | Channel 4 2398 MHz & camera video scan enable |
| | A1* or A1# | Manual mode select of 439.25 receiver audio |
| | A2* or A2# | Manual mode select of 915 receiver audio |
| | A3* or A3# | Manual mode select of 1280 receiver audio |
| | A4* or A4# | Manual mode select of 2398 receiver audio |
| | C0* or C0# | Beacon mode – transmit ID for twenty seconds every ten minutes |
| | C1* or C1# | 1280 analog/ digital select. Hit C1* for digital. Hit C1# for analog. |
| | C2* or C2# | 2433 transmitter for on/off. (C2* enables transmitter and C2# disables it) |

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

# ATCO MEMBERS AS OF APRIL 15, 2006

| Call | Name | Address | City | St | Zip | Phone | URL |
|---|---|---|---|---|---|---|---|
| KD8ACU | Robert Vieth | 3180 North Star Rd | Upper Arlington | OH | 43221 | 614-457-9511 | rfvieth@yahoo.com |
| K8AEH | Wilbur Wollerman | 1672 Rosehill Road | Reynoldsburg | OH | 43068 | 614-866-1399 | wilburapilot@yahoo.com |
| KC3AM | David Stepnowski | 735 Birchtree Lane | Claymont | DE | 19703-1604 | | kc3am@comcast.net |
| KC8ASD | Bud Nichols | 3200 Walker Rd | Hilliard | OH | 43026 | 614-876-6135 | kc8asd2@netzero.com |
| KC8ASF | Tom Pallone | 3437 Dresden St. | Columbus | OH | 43224 | 614-268-4873 | |
| W6CDR | Wynn Rollert | 1141 Pursell Ave | Dayton | OH | 45420 | 937-256-1772 | w6cdr@hotmail.com |
| WB8CJW | Dale & Sharon Elshoff | 8904 Winoak Pl | Powell | OH | 43065 | 614-210-0551 | delshoff@columbus.rr.com |
| N3DC | William Thompson | 6327 Kilmer St | Cheverly | MD | 20785 | | |
| WA8DNI | John Busic | 2700 Bixby Road | Groveport | OH | 43125 | 614-491-8198 | jabusic@yahoo.com |
| K8DW | Dave Wagner | 2045 Maginnis Rd | Oregon | OH | 42616 | 419-691-1625 | |
| WA3DTO | Rick White | 308 Orial Ct | Evans City | PA | 16033 | 614-595-4966 | wa3dto@aol.com |
| WB8DZW | Roger McEldowney | 5420 Madison St | Hilliard | OH | 43026 | 614-876-6033 | wb8dzw@aol.com |
| KC8EVR | Lester Broadie | 108 N Burgess | Columbus | OH | 43204 | | |
| KB8FLY | Rod Shaner | 124 West Walnut St. | Lancaster | OH | 43130-4344 | 740-654-5694 | rshaner@copper.net |
| W8FZ | Fred Stutske | 8737 Ashford Lane | Pickerington | OH | 43147 | | w8fz@arrl.net |
| KB8GHW | Mike Amirault | 11354 Reussner Dr SW | Pataskala | OH | 43062 | 740-927-5005 | kb8ghw@ee.net |
| W8GUC | Reuben Meeks | 1345 Helke Rd | Vandalia | OH | 45377 | 937-454-0968 | rcmeeks2@hughes.net |
| WA8HFK,KC8HIP | Frank, Pat Amore | 3630 Dayspring Dr | Hilliard | OH | 43026 | 614-777-4621 | famore@wowway.com |
| WG8I | Chris Vojsak Sr, | 3536 W Henderson Rd | Columbus | OH | 43220-2232 | | |
| N8IJ | Dick Knowles | 1915 Tamarack Circle S. | Columbus | OH | 43229 | | rgk_w8jnp@hotmail.com |
| K8KDR,KC8NKB | Matt & Nancy Gilbert | 5167 Drumcliff Ct. | Columbus | OH | 43221-5207 | 614-771-7259 | k8kdr@arrl.net |
| W8KHW | Kevin Walsh | 2396 Anson St | Columbus | OH | 43220 | | |
| K4KLT, KD4ODQ | Bob & JoAnnSchmauss | P.O. Box 1547 | Land O' Lakes | FL | 34639-1547 | 813-996-2744 | schmauss@att.net |
| N8KQN | Ted Post | 1267 Richter Rd | Columbus | OH | 43223 | 614-276-1820 | n8kqn@copper.net |
| WA8KQQ | Dale Waymire | 225 Riffle Ave | Greenville | OH | 45331 | 513-548-2492 | walkingcross@mail.bright.net |
| N3KYR | Harry DeVerter Jr | 303 Shultz Road | Lancaster | PA | 17603-9563 | | n3kyr@comcast.net |
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| WB8MMR | Mike Knies | 1715 Winding Hollow Dr. | Columbus | OH | 43223 | 614-875-4236 | |
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| WU8O | Tom Walter | 15704 St Rt 161 West | Plain City | OH | 43064 | 614-733-0722 | twalter@emec.us |
| N8OCQ | Bob Hodge Sr. | 3584Bluff Gap Dr. | Grove City | OH | 43123 | | hodgerob@yahoo.com |
| KB8OFF | Jess Nicely | 742 Carlisle Ave | Dayton | OH | 45410 | | kb8off@prosurvisp.com |
| N8OPB | Chris Huhn | 1667 Pickering Court | Reynoldsburg | OH | 43068 | | cjhuhn@hotmail.com |
| W6ORG,WB6YSS | Tom & Maryann O'Hara | 2522 Paxson Lane | Arcadia | CA | 91007-8537 | 626-447-4565 | tom6ORG@hamtv.com |
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| N8SFC | Larry Campbell | 316 Eastcreek Dr | Galloway | OH | 43119 | | |
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| KB8UGH | Steve Caruso | 6463 Blacks Rd. SW | Pataskala | OH | 43062-7756 | | |
| WB8URI | William Heiden | 5898 Township Rd #103 | Mount Gilead | OH | 43338 | 419-947-1121 | |
| KB8UU | Bill Rose | 9250 Roberts Road | West Jefferson | OH | 43162 | 614-879-7482 | |
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| Call | Name | Address | City | St | Zip | Phone | URL |
|---|---|---|---|---|---|---|---|
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| KB8YMQ | Jay Caldwell | 4740 Timmons Dr | Plain City | OH | 43064 | | |
| KC8YPD | Joe Ebright | 3497 Ontario St | Columbus | OH | 43224 | | |
| N8YHY | Chris Scott | 11981 Maple Trail | Hillsboro | OH | 45133 | | |
| N8YZ | DaveTkach | 2063 Torchwood Loop S | Columbus | OH | 43229 | 614-882-0771 | |
| KA8ZNY,N8OOY | Tom & Cheryl Taft | 386 Cherry Street | Groveport | OH | 43125 | 614-202-9042 | ttaft@columbus.rr.net |

# ATCO MEMBERSHIP INFORMATION

Membership in ATCO (Amateur Television in Central Ohio) is open to any licensed radio amateur who has an interest in amateur television. The annual dues are $10.00 per person payable on January 1 of each year. Additional members within an immediate family and at the same address are included at no extra cost.

ATCO publishes this newsletter quarterly in January, April, July, and October. It is sent to each member without additional cost.

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

# ATCO CLUB OFFICERS

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

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

# ATCO MEMBERSHIP APPLICATION

RENEWAL ○ 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/paydues** and fill out the form. Payment is made through "PayPal" but you DO NOT need to join PayPal to send your dues. Simply DO NOT fill out the password details and there will be no PayPal involvement.

# ATCO TREASURER'S REPORT - de N8NT

OPENING BALANCE (01/15/06)..... $ 1756.45
RECEIPTS(dues)..... $ 130.00
Pizza party food..... $ (114.08)
Paypal charges..... $ (2.65)
CLOSING BALANCE (4/15/06)..... $1769.72

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

**FIRST CLASS MAIL**

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