ATCO NEWSLETTER

VOLUME 8 NUMBER 4 OCTOBER 1991

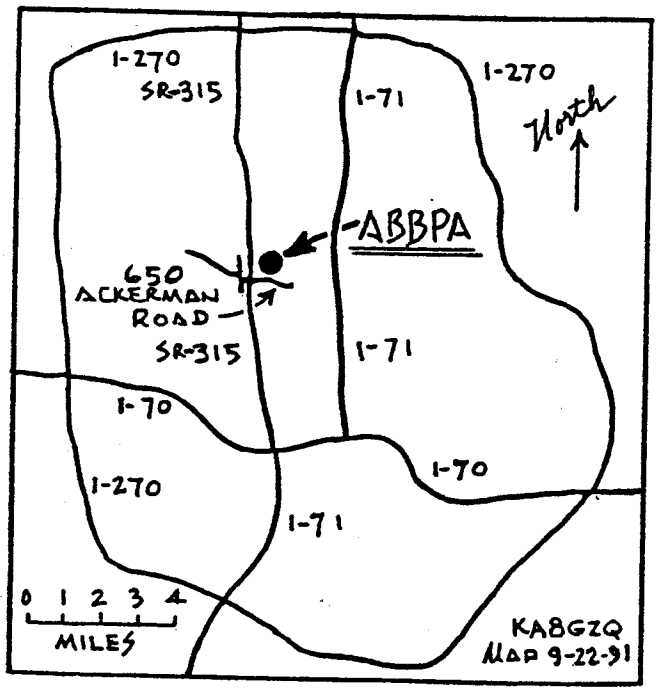
ATCO'S FALL 1991 EVENT

Sunday 13 October 1991 is the day ATCO members will meet from 2:00 to 5:00 PM at the ABB Process Automation (formerly Accuray) Shelterhouse on Ackerman Road. Rick, WA3DTO, is our chairman for this occasion. Map at right will get you there. Full details are on page 3.

From I-70 east or west bound: Take Route 315 (just west of downtown Columbus) and head NORTH. Get off at the Ackerman Road Exit and turn RIGHT onto Ackerman Road. Turn LEFT just beyond first traffic light at the ATCO sign.

If north bound on I-71: Watch for the split to Route 315 just south of Columbus. Take 315 and head NORTH to Ackerman Road Exit and turn RIGHT onto Ackerman Road. Turn LEFT just beyond the first traffic light at the ATCO sign.

If south bound on I-71: Take I-71 to the I-270 bypass loop and head WEST. At the Route 315 Exit, turn LEFT and head SOUTH. Get off at Ackerman Road Exit and turn LEFT. Proceed through one traffic light and turn LEFT at the ATCO sign.



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The ATCO Newsletter is the official publication of a group of television amateurs known as "AMATEUR TELEVISION IN CENTRAL OHIO" and is published in January, April, July, and October.

Membership in ATCO is open to any FCC licensed radio amateur who has an interest in amateur television.

Antennas For ATV

By Richard Morrow, K5CNF

Antennas for use in amateur television frequencies are not much different from the normal antennas that are used at UHF and microwave frequencies. The biggest difference lies in that the former must have a much greater bandwidth in order to pass the wider video signal. Because of this problem, this antenna should have a greater bandwidth than we normally expect to find between 2:1 VSWR points.

The driven element and the rest of the antenna are broadbanded by several methods, usually by making the elements larger in diameter (this can be accomplished through tapering). Fortunately, at the frequencies that ATV is allowed this is not too hard to do. One company makes an antenna for ATV that has a bow-tie shaped driven element in order to give more bandwidth.

For the moment, we will limit ATV frequencies to those found in the 420-440 MHz range, since microwave antennas are usually broadbanded enough to cover the required frequencies with no problem.

Remember that the antenna has to be rotatable unless you are in an area where there is an ATV repeater and you don't operate simplex. Monster arrays are nice, but they do attract the eyes of nonhams and are more likely to suffer wind damage when storms blow in. So pick your antenna with these items and the expected results in mind.

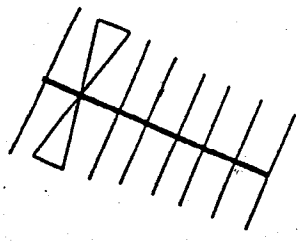
Types Of Antennas For ATV

The usual yagi antennas and the corner reflector are included in this category along with the collinear, so we are not in unfamiliar territory. Figure 1 shows a yagi with a bow-tie driven element intended to increase the bandpass of the driven element.

This type of construction has been used for all elements on standard commercial TV channel antennas. However, it has not been on the market for years due to construction costs and the fact that the standard rod type elements are cheaper and easier to construct.

A good example of the bow-tie driven element yagi antenna is the 430-16 yagi sold by AEA. With a 10 ft. boom and 16 elements, this antenna is advertised as having 14.3 dB gain, with an E-plane beamwidth of 28 degrees and an H-plane beamwidth of 32 degrees. Bandwidth is claimed to be from 420 to 440 MHz. The rest of the elements are rod type elements.

FIGURE 1

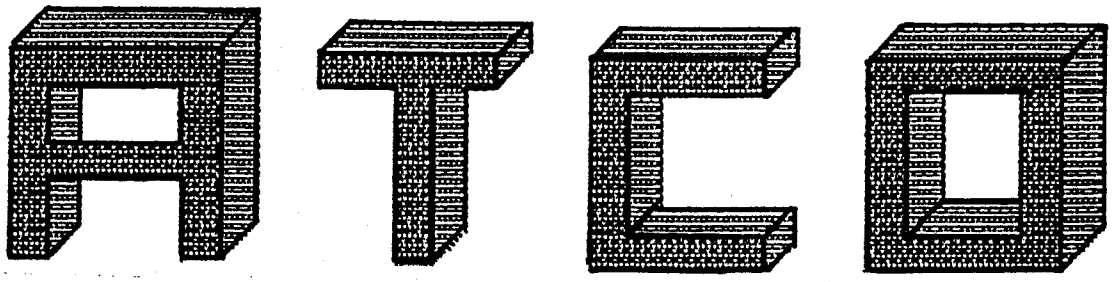


YAGI WITH BOW-TIE DRIVEN ELEMENT
NOT TO SCALE

The Corner Reflector

The corner reflector is another standard ham antenna which will work well on ATV, particularly if you use a bow-tie driven element. Other dimensions

(continued on page 4)



FALL EVENT 1991

ABB PROCESS AUTOMATION SHELTER HOUSE

SUNDAY: OCTOBER 13, 1991

2:00 TO 5:00 PM

!!!! GET-TOGETHER & SHOW AND TELL !!!!

***** BRING THAT FAVORITE PROJECT *****

LUNCH

DOOR PRIZES

HAND-OUTS

****XYL'S AND YL'S WELCOME****

****BRING A FRIEND****

****TALK-IN ON 147.45 MHZ****

****SEE MAP IN THIS ISSUE****

QUESTIONS??? RICK, WA3DTO, 877-0652

COME SEE YOUR FRIENDS

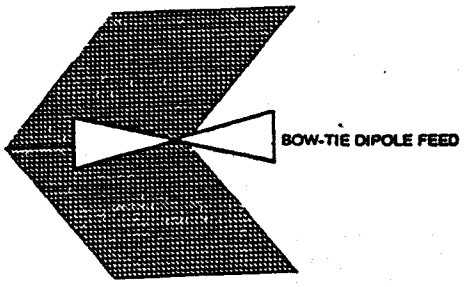
ANTENNAS FOR ATV

(continued from page 2)

stay the same, since they are usually close enough. A lot of commercial UHF TV antennas are of this type, and some have been converted to ham use by changing the spacing and driven element to tune the 430 MHz ham band. This can be a cheap way to go if you can do it.

To obtain maximum reach out of a converted antenna, the reflector elements should also be lengthened. There are some hybrid corner/yagi antennas on the TV market that might be convertible or make a good model to copy using dimensions for the 430 MHz ham band. Figure 2 shows a bow-tie driven element for a corner reflector antenna.

FIGURE 2



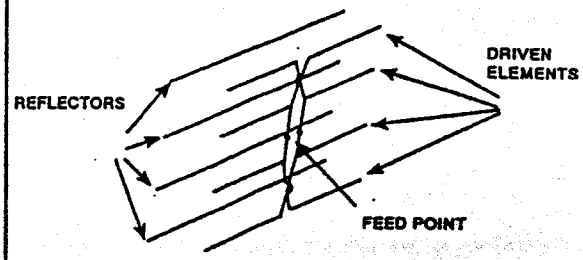
CORNER REFLECTOR WITH BOW-TIE DRIVEN-ELEMENT

The Collinear Antenna

Collinear antennas are blessed with good bandwidth and can therefore be used on ATV with success. The collinear can either be built or purchased since there are some manufacturing firms that make the antenna, and they can be stacked for more gain like the yagi.

The collinear does take up a lot of sky when it is stacked; however, it has a greater bandwidth than a yagi array. Figure 3 is an example of a collinear antenna. Collinears are mechanical monsters if made very large. Cushcraft manufactures the DX-420, a collinear for 420-440 with a 20 MHz bandwidth, making it just right for ATV frequencies.

FIGURE 3

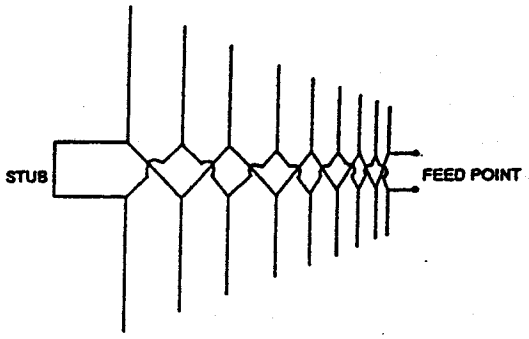


COLLINEAR ARRAY
MAST ELIMINATED FOR CLARITY

The Log Periodic Array

The log periodic antenna is very good for ATV—it is a system of driven elements that are designed to operate over a wide range of frequencies with essentially the same characteristics: VSWR, gain, F/B ratio, and pattern over a 2:1 frequency range or higher. One of the versions has been sold for use with VHF/UHF scanners that cover from 100-1300 MHz and would easily stand use of low ATV transmitting power. Figure 4 is an example of the log periodic.

FIGURE 4



LOG PERIODIC ANTENNA

(continued on page 5)

ANTENNAS FOR ATV

(continued from page 4)

There is information on how to build your own log periodic antenna in several antenna handbooks. The *ARRL Antenna Handbook* has about four pages devoted to it, complete with construction articles and many references and formulas to enable you to build your own LPA.

Remember that there are a lot of commercial TV antennas that are log periodic antenna designs. Some of them can be used on ATV with little conversion as long as you run low power. This could possibly be one way to get on the air quickly, particularly if you used a UHF antenna tuner to eliminate the little VSWR that might show up.

Other Antennas

Other antennas, such as the cubical quad and the quagi, will work on ATV. Just remember that ATV signals are horizontally polarized, and that there is a little vertical polarization present with these antennas which could cause some phase shift and ghosts at the receive end over a long path. Of course, this problem can happen with any antenna over a long path due to the ample width of the signal.

Conversion of commercial TV antennas is not out of the question, and some of them may work just fine as they are. I once used a UHF TV antenna on 450 MHz FM with a 5 watt Icom HT at low power. The only problem was that when I went to 5 watts, I burned up the balun. VSWR was not too bad, until the balun vaporized. I had mounted it vertically to get the polarization correct for the local repeaters and it did fine at .5 watt but not at 5 watts.

If conversion is not your cup of tea, you can always make an antenna using the TV antenna of your choice as a model and employing dimensions for the amateur band you are going to operate on. This is a cheap way to get an antenna designed for you with minimum effort.

For the most part, your current station antenna might be usable on ATV. The quickest way to find out is to check the VSWR at the ATV frequency you wish to operate on. If 2:1 is going to be too high, start looking at the options you have available. Just remember that the polarization must be horizontal. Check out what other ATV operators in your area recommend, and see what stays up in a high wind the best. ■

Reprinted with permission from RADIOSCAN MAGAZINE, September 1991 issue. (Submitted by Rick, WA3DTO.)

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ATV PROGRAM FOR ATT/WE ARC

The American Telephone and Telegraph Co. and Western Electric Amateur Radio Club (ATT/WE ARC) will hold their monthly meeting at 7:30 PM, 14 October 1991, at the Reynoldsburg Public Library 1402 Brice Road. Wilbur, K8AEH, and Bill, W8DMR, will present a program and provide an ATV demonstration. Announcements concerning the meeting may be heard on the 146.67 repeater.

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ATCO FINANCIAL STATEMENT

Cash balance as of 30 June 1991: $544.86. Receipts: none. Expenditures: printing charges for July 1991 ATCO Newsletter $26.65; postage for July 1991 ATCO Newsletter $11.60; miscellaneous costs incidental to publication of newsletter $2.49; total expenditures $40.74. Summary: cash balance as of 30 June 1991 $544.86; receipts none; expenditures $40.74; balance as of 30 September 1991 $504.12

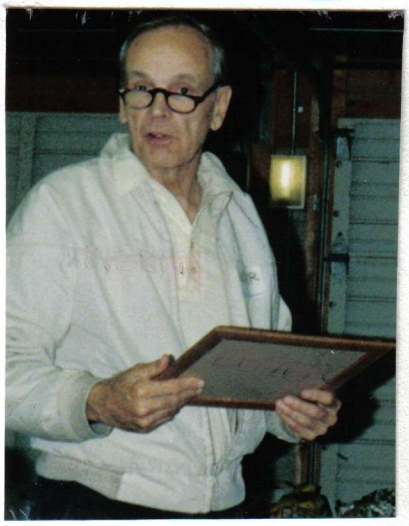
The above financial report was prepared as of 30 September 1991 by Warren G. Duemmel, KA8GZQ, ATCO Acting Treasurer.

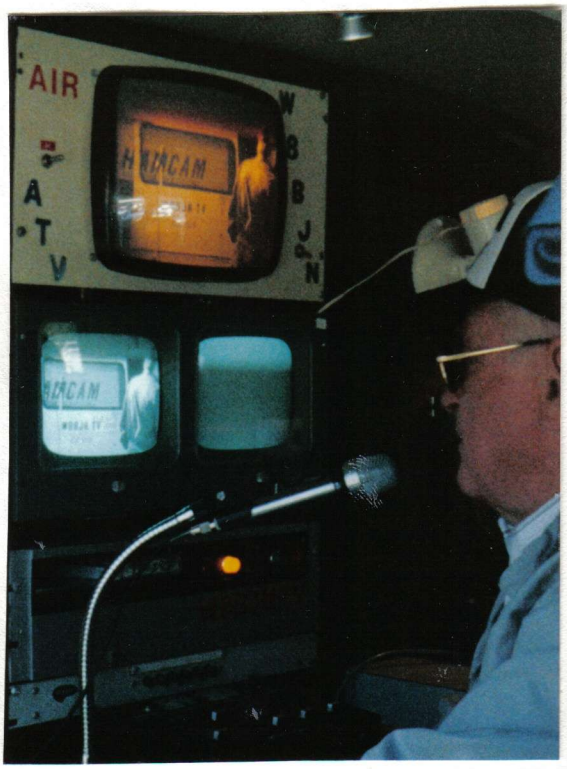
1990 FALL EVENT PHOTOS

The ATCO Newsletter recently received this page of photos from Foster, W8EHW, taken on 14 October 1990. We thought you would like to see them. Our thanks to Foster. Photos are identified on next page.

Note:

The pictures that were on this page have been scanned in color and are on the following page.





These are the pictures on page 6 of Vol 8_IIII ATCO Newsletter.

IDENTIFICATION OF 1990 FALL EVENT PHOTOS

Top row: in the photo at left, shown left to right in front are Charlie, K8AOH, and Bob, W8BLN, in background are Bill, WB8URI, and Blaire, N8CYV; in center photo, Martha, KA8WGX (K8JGY XYL), and Fred, K8JGY; and on right, Warren, KA8GZQ, ATCO Newsletter Editor.

Middle row: on left, Gene, W8BJN, sitting in HAMCAM; center above, Ken, WA8RUT, and below, Bill, W8DMR; right photo, Gene at HAMCAM controls.

Bottom: on left, John, WA8EOY, and Betty (WA8EOY XYL); photo on right is exterior view of the HAMCAM.

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SECOND DARA BALLOON LAUNCH

The Dayton Amateur Radio Association will launch their second High-Altitude Amateur Radio Balloon Experiment at 9:00 a.m. on 6 October 1991. Three separate transmitters on board will operate on HF (14.035 MHz), VHF (144.340 MHz), and UHF (ATV on 439.250 MHz).

Further information concerning this flight can be obtained from ATCO member Dave, AH2AR, or via packet through AH2AR @ W8BI.OH. (Submitted by Dave, AH2AR.)

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"HAMCAM" STORY IN WORLDRADIO

Nearly a full page in the August 1991 of Worldradio Magazine was devoted to the Union County Amateur Radio Club's "HAMCAM" van.

The van was on display at the Marysville Hamfest and Computer Show on 25 August and was enjoyed by all in attendance. (Submitted by Gene, W8BJN.)

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AND NOW ATV ON A ROCKET

In mid-October, students at Southeastern Community College in Whitesville, North Carolina, plan to fly their 11-foot rocket into space. As part of their electronics course, the students built a 73-pound rocket which is expected to fly up to over 300,000 feet. Listen to the AMSAT net (3.840 MHz) Tuesday at 9:00 p.m. or the ATV net (3.871 MHz) same day and time for announcements and launch date. (Submitted by Bill, W8DMR.)

Editor: Warren, KA8GZQ

FIRST CLASS MAIL

ATCO NEWSLETTER
c/o Warren G. Duemmel
3488 Darbyshire Drive
Hilliard, Ohio 43026

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WB8URI 1200 MHZ AMPLIFIER

Photo above shows Bill's homebrewed 1200 MHz single tube amplifier with built-in power supply. See this project at the ATCO 1991 Fall Event on Sunday October 13. Details will be included in the next issue of the ATCO Newsletter.

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