ATCO NEWSLETTER

VOLUME 11 NUMBER 4 **OCTOBER 1994**

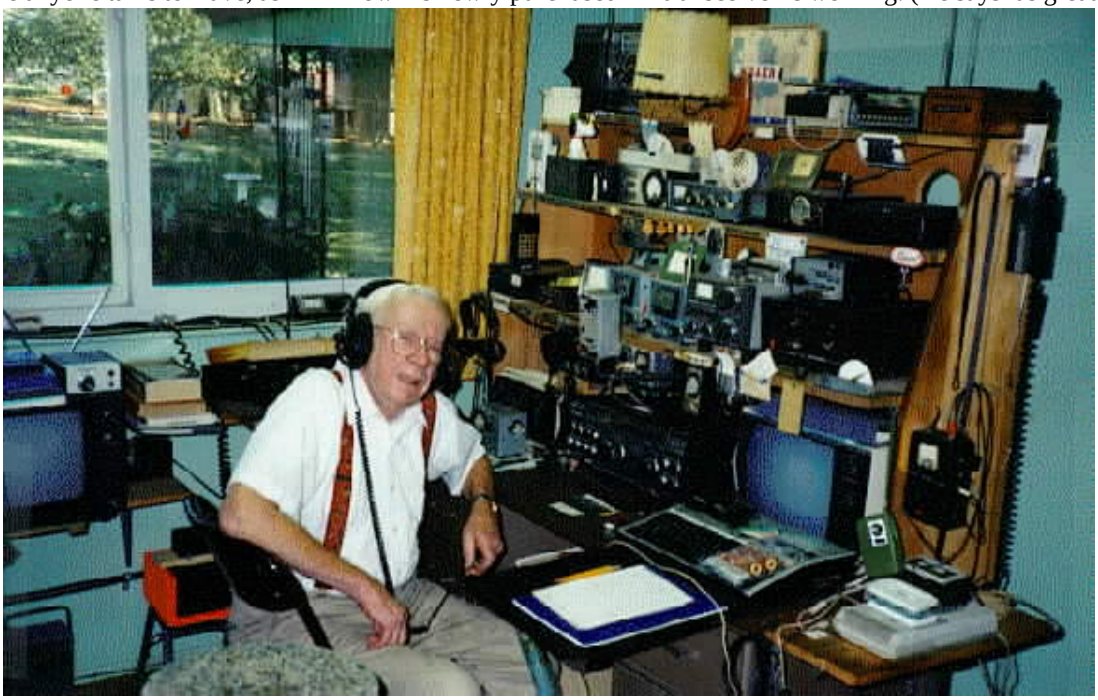
The ATCO newsletter is the official publication of a group of amateur television operators known as "AMATEUR TELEVISION IN CENTRAL OHIO Group Inc." and is published quarterly (January, April, July, and October)

ATV REPEATER UPDATE

The ATV repeater has been operational for almost 12 months now and is still working "OK". Some improvements are being made as well as repairs to existing equipment. A major repeater rebuild is still in the works as well as receive site enhancements. The weather radar picture is operational but will be improved in the near future. See inside for further details.

ATCO HAM IN THE SPOTLIGHT

This time the center stage belongs to Dave Sears W8AER. Dave is one of our charter members in ATCO and also is the most senior member of the group. He obtained his license in 1930. Now active in ATV, he's been tinkering with video devices longer than most of us. Congratulations Dave, for your keen interest in this hobby; many of us have learned from your experiences. The next time anyone talks to Dave, ask him how his newly purchased HF transceiver is working. (He says it's great!!!)

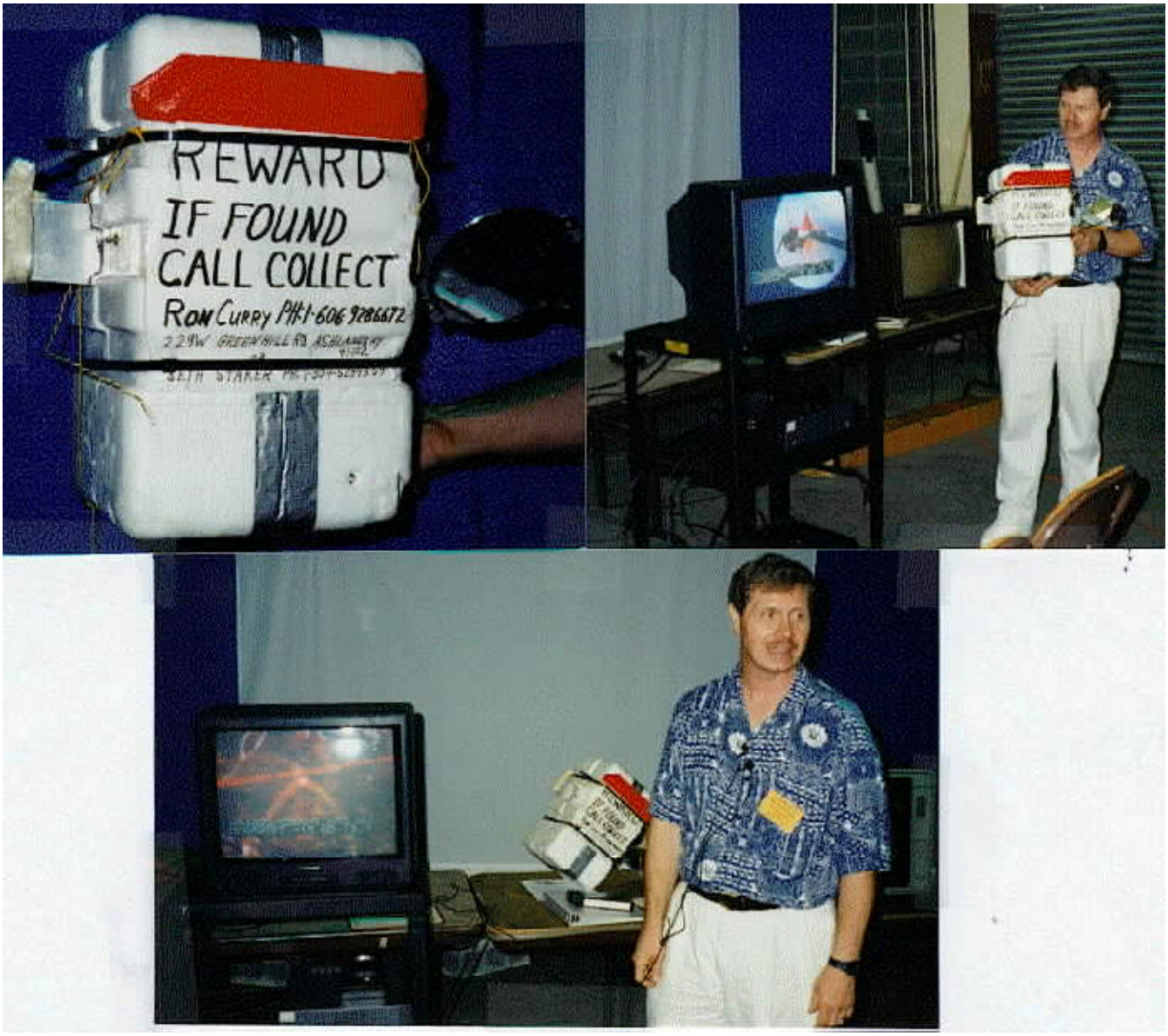


ATV TALK AT HUNTINGTON, W.VA. HAMFEST

This summer I attended the Huntington, West Virginia hamfest for the first time and was very favorably impressed. (Huntington is just across the Ohio River from Chesapeake, Ohio). It was a very hot day so I was relieved to find it held in downtown Huntington in the civic center building where their hockey team plays. They covered the rink with wooden flooring over the ice so it was at times almost too cool in there even though it was pushing the mid 90's outside.

The hamfest itself was somewhat small but I counted at least 6 vendors to complement the individuals that were selling their "stuff". The ATV group was well represented also with Ron WA4GSS demonstrating his repeater. Additionally, their ATV group had a table full of ATV goodies. Ron held an ATV seminar which I attended and found to be very well done.

The seminar also included a video presentation of their past balloon launches followed by a question and answer session about this fascinating portion of our hobby. Included was a hands on look at the actual electronics package that made the last trip. Although it looked quite primitive all wrapped up in its styrofoam housing, I was impressed on how they were able to pack so much functionality into such a light weight package. For those of us that have never seen a device like that, the pictures below should prove to be fascinating. Who knows, maybe some of us could get hooked!!!



COLUMBUS HAMFEST…GOOD NEWS & BAD

On August 6 Columbus Ohio had the 5th annual hamfest at the Shrine Temple in Columbus. The good news is we had super weather...cool day, low humidity, bright blue sky. The bad news...almost no one showed up. It's really too bad for I felt that they advertized it more than they ever have, organized it by providing a good facility and planned activities and the like, but no people. I hope that doesn't discourage the organizers so much that they won't do it again next year. That would be too bad. Don't give up guys...let's try again.

It looked like a good opportunity for us too! We were planning to have an ATCO meeting and have an antenna measuring party. (My fault there...the equipment wouldn't work right but that's another story. We'll try again).

However, a huge success was Ken's (WA8RUT) talk and demonstration about ATV. When you consider that I guess that there probably only about 300 people at the event, to have 17 show up for the talk would be considered very good. Ken gave about a 1/2 hour talk then showed a video of our activities. Good job, Ken!

Art...WA8RMC

REPEATER ACTIVITY ..... from my workbench

Let's see now, the last time I asked for warmer weather, I got it!!! Much too much of it but at the time I didn't specify the upper limit or duration. So.... I guess I'll leave well enough alone this time. In retrospect, we had, In my opinion, a very acceptable summer for outdoor activities like antenna repair and the like had it not been for the "honeydo" projects that came first. Well, wouldn't you know it....those projects got completed just in time to usher in colder weather. A few Ham projects did get done, however, which are described next.

I spent a significant amount of time getting the repeater receive site antennas and preamps working and packaged. First...the antennas had to be built. Shaun KB8MDE built the dual slot 439 Mhz receive antenna and I spent time final tuning it. (It now has about 8db gain) Next...I built and tested the single slot 1282 Mhz receive antenna which is now ready. Next...a search for a waterproof box to put the 439 and 1282 preamps and the respective filters in was undertaken. I found one at work but it had some major cutout holes in the front that needed to be sealed closed before it could be used. To the rescue was Tom Taft KA8ZNY who TIG welded stainless patches into the existing holes creating a watertight combination. Thanks, Tom!!! (Anyone who needs an expert welder, really needs to contact Tom). Next...I secured the preamps that were purchased by Ken WA8RUT. These units proved to be far less than optimum when tested so some rework was in order. The 439 preamp (a Paulden unit) had low gain at first (10 db) and then failed altogether. I found that Dale WB8CJW had an extra MGF1302 GASFET transistor so we put it to good use here. It then yielded about 18 db of gain but the input tuning was all the way out to accomplish that. After removing about 1/2 turn of the input coil, the adjustment peaked near center range and it produced about 22 db of gain. With that one out of the way, I fired up the 1280 Mhz preamp (a Down East Microwave unit) which produced a respectable 25 db but there was no input tuning components. This could spell disaster in the presence of any strong nearby RF fields, inband or not so I decided rather quickly that input filtering was mandatory because of the intended location (commercial TV tower downtown). I brushed up on cavity filter basics (see article later in this issue) to do a good job here. Since the anticipated interference is on the low side of 1280 Mhz, a capacitively coupled filter was built. This gives a steeper attenuation slope on the low side of the center frequency. A few evenings later, the final design was placed into the box alongside the two preamps and an interdigital filter purchased for the 439 Mhz portion. So, at last the preamp/filter system is ready to mount as soon as we receive the green light from the tower owners. Fortunately, I'm told, two runs of coax exist on the tower for our use if we need it. This still needs to be confirmed when we gain access to the site.

So, as you may see, idle time has been scarce. I'm sure that Dale WB8CJW went through similar experiences dealing with the controller portion of the project but I'll let him tell that story. Art...WA8RMC

The receive half of the repeater is currently operating from my QTH near Powell, OH using a KLM 24 element beam (generally headed west) linked to the transmitter downtown via 910.25 MHz. The equipment is repackaged in preparation for the new site and provides much easier access for servicing. This involved mounting the modules in various diecast aluminum boxes on the surface of two 19-inch rack mount shelves each having separate 12 volt power supplies. All signals and power in & out of the enclosures have bypass filters or feedthru capacitors along with shielded interconnecting cables. Power and control signals interconnect with the "Eurostyle" barrier strips, audio uses RCA phono plugs and F connectors make the video hookup. F connectors are probably the easiest cables to make and seem to be reasonably reliable but they are really a pain to attach and remove from a panel - especially when they're close together. The equipment consists of a Spectrum International 439.25 receive converter, a PC Electronics VRC45b which provides video and audio and a VOR-2a which detects the presence of horizontal sync on the received video. The "video operated relay" provides one relay to power the 910.25 MHz. link transmitter and another to switch between the received video to ID video (Elktronics VDG-1) after 10 minutes or at the end of a transmission (loss of sync). The addition of a PC Electronics TVCX-23/70 receive converter using a HF Technology IF70 FM video IF/demodulator provides a second input on 1280 MHz. This presented the task of how to control video from two separate sources and not permit one video to knock the other out or be combined together. So, I constructed a second VOR circuit along with the necessary logic and audio/video switching to provide output from either band on 'first-in, first-out' basis. The two meter receive module was made switchable between 147.45 or 144.34 MHz. with its audio feeding a Hamtronics (heavily modified) touch-tone decoder/controller. Control is provided to enable or disable either receiver (or both), select which 2M receive frequency, and select the weather radar, along with other future expansion capabilities - anyone have any ideas?Dale...WB8CJW

NEW MEMBER'S SECTION

We want to welcome the following new members to our group. They're the ones who will hopefully become more interested in this hobby and provide active support toward this segment of Amateur Radio!!! The following list are the new entries since the last newsletter.

N8LMI Phil Buckholdt
KA8HAK Jim Reese
W8PGP Richard Burggraf
WD8BGG Roger Burggraf

THE COLUMBUS AIRPORT RADAR LINK

I've not had an opportunity to improve the radar signal from Port Columbus to any significant degree. The access hasn't changed so if you'd like to look at it, punch 264 on 147.45 to bring it up for 5 minutes and # to take it down before the timeout. A few trips to readjust the camera has helped but I'm afraid that it won't get better till I finish the solid state scan converter to replace the camera pointed at the TV screen out there. It is in process and the breadboard is about 2/3 complete with portions of it checked out and working.

A number of possible actions could result from the radar operations move to Willmington, Ohio which has taken place as of October 2, 1994. For the time being, the Port Columbus radar will remain in operation although most weather forecasting along with Doppler radar pictures will originate from Willmington. It is anticipated that weather forecasting to support the aviation activities at Port Columbus to continue as is well into 1995 and possibly beyond. As developments materialize, we'll try to keep everyone informed. Stay tuned - more to come!

Art...WA8RMC

434 MHz ATV DX RECORD

July 12, 1994

The summer tropo duct between Hawaii and the mainland opened strong enough today for the first fast scan ATV reception over this **record 2509 mile path.** Paul Lieb, KH6ME, switched the dual 22 element K1O 432.072 MHz CW beacon horizontal beams over to the 434.0 MHz ATV transmitter system consisting of a 1.5 watt P.C. Electronics RTX-70 ATV Repeater transmitter driving a 100 watt Mirage D100ATV-R linear amp in the early afternoon of July 11th. P2 to P3 video was plainly visible by Gordon West, WB6NOA, in Costa Mesa CA. Gordon and Paul have been attempting this ATV record breaking path for over three years. He alerted Tom O'Hara, W6ORG, to the opening and asked him to start calling Southern California ATVers about the opportunity so they could switch their polarity over from vertical and give it a try. The second one, and farthest, to see the video was Mike Henkoski, KC6CCC in San Clemente, CA who got a good video tape recording and retransmitted it over two of the local ATV repeaters. The Elktronics video call ID, and other detail was plainly visible in black and white, but just below signal strength for color when the signal peaked at 2:35 PM PST. Mike had to quickly wrench the rusted U-bolts of his vertically polarized KLM 440-10X beam and turn it over to horizontal. The antenna was connected to a P.C. Electronics TC70-1 transceiver through 50 feet of Belden 9913. Don Stellmacher, WA6BHF, in Los Angeles also received a picture that evening around sunset at 8:02 PM. Coordination and verification was conducted on 144.170 SSB which was also very good during the opening. Paul would transmit the video for 15 minutes on the hour. He did not have the TV set at the Mauna Loa Volcano site today, but will try to receive for the first two way next month when Gordon is there to help.

Submitted by Tom O'Hara, W6ORG

ATCO

1994 FALL EVENT

1:00 PM - SUNDAY
NOVEMBER 6, 1994
ABB PROCESS AUTOMATION
(ACCURAY)
*** SHELTERHOUSE ***
650 ACKERMAN ROAD
FOR MORE DETAILS, CONTACT
RICK - WA3DTO 877-0652

LUNCH PROVIDED - DOOR PRIZES - MEETING
BRING A FRIEND AND MEET OLD FRIENDS
SHOW AND TELL

DIRECTIONS TO THE ATCO EVENT

From I-70 either EAST or WEST Bound:

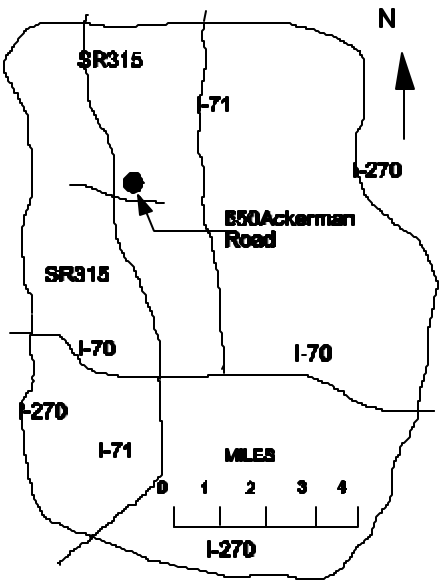
Take Route 315 (runs north and south and is just west of Columbus) and head NORTH. Get off at the Ackerman Road Exit and turn RIGHT on to Ackerman Road. Turn LEFT just beyond the first traffic light at the ATCO sign.

From I-71 traveling NORTH bound toward Columbus:

While traveling north on I-71, watch for the split to Route 315 just south of Columbus. Take 315 and head NORTH to the Ackerman Road Exit. Get off at this exit and turn RIGHT to Ackerman Road. Turn LEFT just beyond the first traffic light at the ATCO sign.

From I-71 traveling SOUTH bound toward Columbus:
(USE THESE DIRECTIONS IF YOU'RE "NORTH" OF I-270).

Take I-71 SOUTH to I-270 Bypass Loop & head WEST on I-270.
At the Route 315 Exit, turn LEFT. Head SOUTH on Route 315. Exit at Ackerman Road and turn LEFT (head east). Proceed through 1 traffic light & turn LEFT at the ATCO sign.

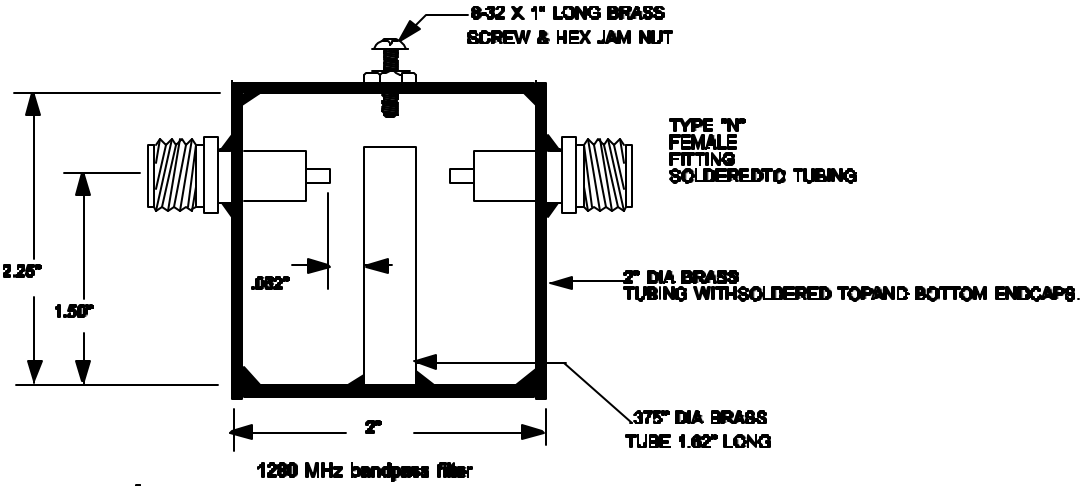


BUILD THIS 1280 MHZ CAVITY FILTER

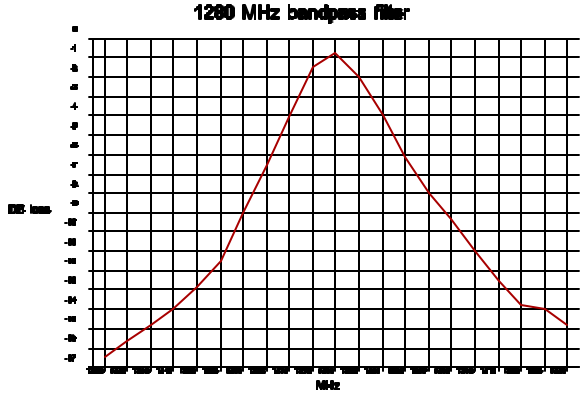
Here is a simple single cavity filter for the 1280 Mhz band. The design is the result of a need to provide a front end tuned input for the Down East Microwave 1280 Mhz GASFET dual stage preamp. This preamp has no tuned input stage so its response is quite broad. To minimize unwanted interference from swamping and desensitizing the front end, this filter was born. Now I realize that many of you don't own a lathe that I used to construct this device so use this information to make do with what you have. For instance, a round cavity is not needed...a square one of similar dimensions made out of blank copper clad circuit board stock will also work. I used what was available...which turned out to be a piece of 2 inch diameter silver plated brass tubing that I found at a Hamfest disguised as some weird sort of RF filter. I look for items like this that can be used for these projects.

In any case, look at the input and output coupling of this design. Not very often will you find a cavity that is not link coupled on input and output. This design uses capacitive coupling to the center post provided by the end of each female "N" fitting. The spacing of about 1/16 inch seems just about right but leave room to be able to slide them in and out to obtain good coupling without reducing the Q too much. Closer provides more coupling and further away from the center post reduces coupling and raises the Q which will affect the sharpness of the bandpass. Also, and probably the most important, is that as coupling is reduced, the loss thru the cavity increases. With a little juggling a happy medium can be found where the coupling is minimized before the loss becomes noticeable. This is not a critical adjustment and "on the air" tests will be adequate but, in my opinion, nothing beats a good weak signal source and RF voltmeter so you can "play with the adjustments" longer.

Note that even though the "books" indicate capacitive coupling steepens the lower frequency skirt of the curve, my tests show only *slight* differences. Oh well, it **is** better and it's easier to construct than link coupling so..."go for it".



1280 MHz bandpass filter



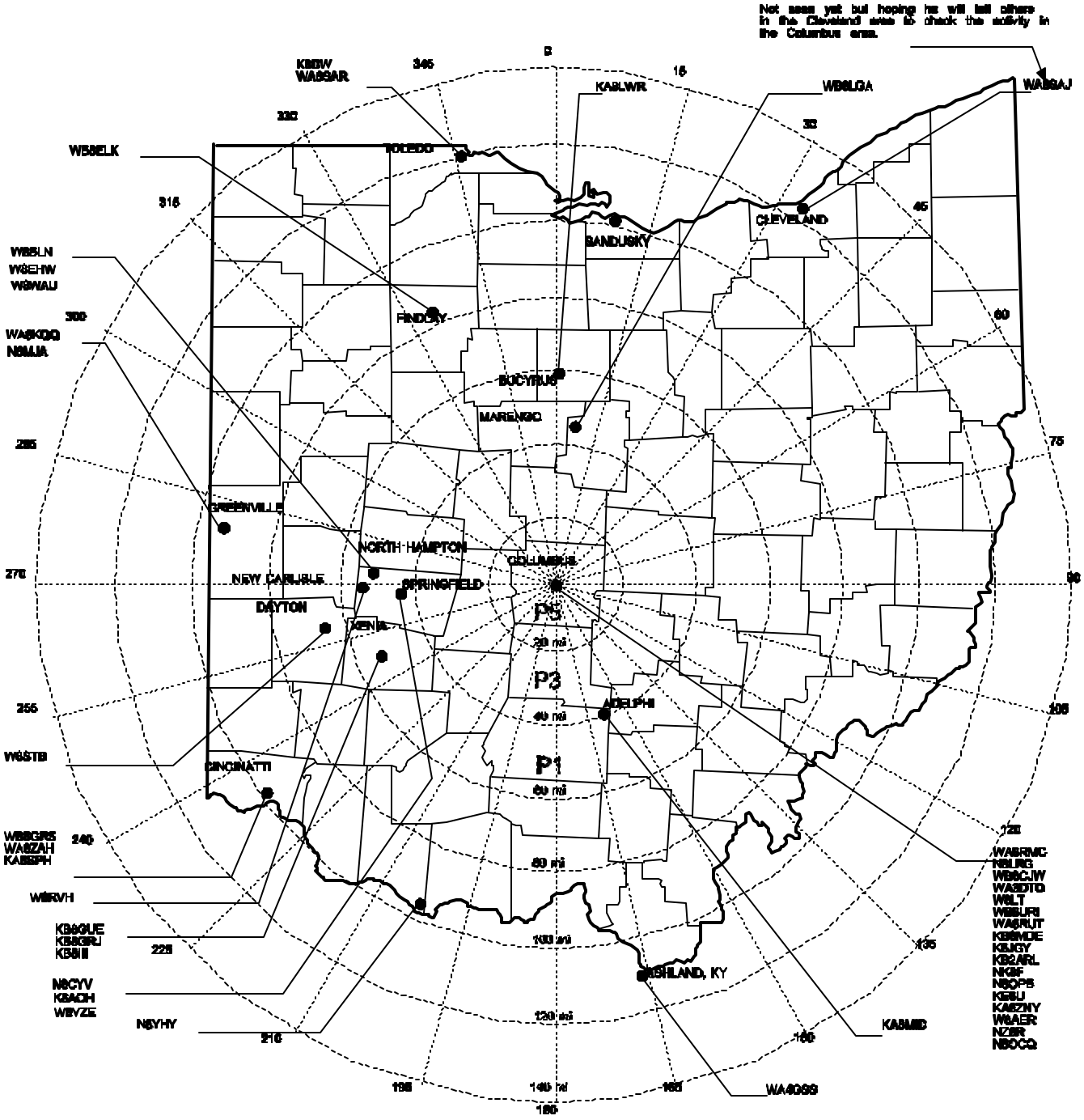
The diagram and graph on the right should provide sufficient data to enable duplication.

Happy building!!!

Art...WA8RMC

ATV LOCATOR MAP

Below is an Ohio map complete with counties, main cities, beam heading (from Columbus) and all of the hams known to have had video on the air recently. Please report anyone that has had video on and seen recently. If video is not reported for a given individual in about a year, I will remove them from the map. Let's see if we can make Ohio near the top for ATV activity. The map also contains mile circles with approximate P levels expected. Generally the signal drops by 1 P unit each time the distance is doubled if all other factors remain unchanged. The P numbers are typical reported values under average (non band open) conditions.



ATCO REPEATER TECHNICAL DATA SUMMARY

This space of each publication of the ATCO Newsletter will include the technical information of our repeater. Each time a new feature is brought on line it will be added here. Use this "table of information" as a quick reference for up/down access codes as well as some of the more important parameters of our system. Comments both pro and con are welcome.

Main repeater:

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 and 1258.25 mhz FM modulation
vestigial sideband filter in output line of 427.25 transmitter
average power = 50 watts (427.25) 10 watts (1258.25)

Transmit antenna: 427.25 mhz - Dual slot horizontally polarized 7 dbd gain Major lobe north
1258.25 mhz - Single slot horizontally polarized 3 dbd gain Major lobe west

Receivers: 147.45 mhz for input control of touch tones
910.25 mhz for link data from remote sites

Receive antennas: 147.45 mhz - Vert. polar. Hi Gain "Comet" 12 dbd (also for 440 mhz input)
910.25 mhz - DB Products vert. polarization 10 dbd

Input control: Touch tones as follows:

	UP	DOWN
beacon (10 min) 439 #0		
weather radar	697	#
airport radar(5 min)	264	#
NASA Select	*70	*20
1 minute ID	*38	#D
Bulletin board	*77	*22

Remote sites: Airport radar at Port Columbus airport (910.25 mhz link output 8 watts)
NASA select at KA8ZNY QTH (910.25 mhz link output 10 watts)
Aux link at WA8RUT QTH (910.25 mhz link output 1 watt)
Aux link at WB8CJW QTH (910.25 mhz link output 1 watt)
Aux link at WA8RMC QTH (910.25 mhz link output 10 watts)
Main repeater input:
Location: Downtown OSU area *
Input freq. 439.25 mhz (and 1280.25 in near future)
Input antenna: Zig-zag at 75 ft elevation *
Link freq. 910.25 mhz output 1 watt
Link antenna: 15 el loop yagi 13 dbd gain

*Note: Sometime during the month of October, we hope to move the receive site to the old WBNS ch 10 tower located in the near downtown Columbus area. Elevation there will be about 350 feet. Antennas (already built) will be a dual slot for 439.25 mhz and a new 1280 mhz single slot for inputs on 1280.25 mhz.

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 are included at no extra cost.

ATCO publishes the ATCO newsletter quarterly in January, April, July, and October. The newsletter 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.

Your support of ATCO is welcomed and encouraged.

ATCO MEMBERSHIP APPLICATION

RENEWAL ○ NEW MEMBER ○ DATE _____
OK TO PUBLISH PHONE # IN NEWSLETTER YES ○ NO ○ HOME PHONE _____
NAME _____ CALL _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____

FCC LICENSED OPERATORS IN THE IMMEDIATE FAMILY
_____
_____
_____

COMMENTS_____
_____
_____
_____
_____

ANNUAL DUES PAYMENT OF $10.00 ENCLOSED CHECK ○ CASH ○
Make check payable to ATCO or Bob Tournoux & mail to:

Bob Tournoux KF8QU
3569 Oarlock Ct
Hilliard, Ohio
43026

ATCO FINANCIAL STATEMENT

CASH BALANCE (as of 7/5/94.....	$785.42
RECEIPTS (dues).....	$ 30.00
OTHER INCOME (bank dividend)	$ 2.04
(error in check charges).....	$ 44.20
EXPENDITURES (postage for July newsletter).....	$(17.40)
(bank service charge).....	$ (2.00)
(film processing).....	$ (6.03)
BALANCE (as of 10/15/94).....	$836.23

ATCO MEMBERS AS OF 15 OCTOBER 1994

K8AEH	Wilbur Wollerman	1672 Rosehill Road	Reynoldsburg	Ohio	43068	866-1399
W8AER	Dave Sears	1678 Kaiser Dr	Reynoldsburg	Ohio	43068	861-0904
KB2ARL	Dave DiGiuseppe	2081 Elmore Ave	Columbus	Ohio	43224	478-4539
WB4BBF	Randall Hash	212 Long Street	Bluefield	Va.	24605	
WD8BGG	Roger Burggraf	5701 Winchester So. Rd	Stoutsville	Ohio	43154	
WB8CJW	Dale Elshoff	8904 Winoak Pl	Powell	Ohio	43065	766-5823
N8CYV	Blaire Standley	721 West North St	Springfield	Ohio	45504	
K8DW	Dave Wagner	2045 Maginnis Rd	Oregon	Ohio	42616	1-419-691-1625
WA3DTO	Rick White	5314 Grosbeak Glen	Orient	Ohio	43146	877-0652
WB8DZW	Roger McEldowney	5420 Madison St	Hilliard	Ohio	43026	876-6033
W8EHW	Foster Warren	124 East Clark St	No. Hampton	Ohio	45349	
WA8EOY	Jonh Schlaechter	3199 Lewis Rd	Columbus	Ohio	43207	491-4470
KB8EWX	Cris Bauer	6227 Arapahoe Pl	Dublin	Ohio	43017	761-3567
NK8F	Rich Budd	734 Hager Court	Gahanna	Ohio	43230	471-5354
W8FB	Paul Wagner	2045 Maginnis Rd	Oregon	Ohio	43616	1-419-691-1625
N8FFO	Edward Hauff	2716 Columbus Ave	Columbus	Ohio	43209	253-5794
KB8GRJ	Adrian Oakes	155 Lower Hillside Dr	Bellbrook	Ohio	45305	
WA4GSS	Ron Curry	229 West Green Hill Rd	Ashland	Ky.	41101	
KA8HAK	Jim Reese	1106 Tonawanda Ave	Akron	Ohio	44305	
N0IKJ	Ruth Budd	734 Hager Court	Gahanna	Ohio	43230	471-5354
K8JGY	Fred Yost	234 Schofield Rd	Gilbert	SC.	29054	
N8KCB	Chris Morris	3181 Gerbert Rd	Columbus	Ohio	43224	261-8583
WA8KQQ	Dale Waymire	225 Riffle Ave	Greenville	Ohio	45331	
WB8LGA	Chuck Beener	2548 State Route 61	Marengo	Ohio	43334	1-419-864-7224
N8LMI	Phil Buckholdt	153 East Bergey St	Wadsworth	Ohio	44281	
N8LRG	Phillip Humphries	3226 Deerpath Drive	Grove City	Ohio	43123-4100	
WD8LXX	Rob Peebles	PO Box 1334	Dublin	Ohio	43017	
KA8MID	Bill Dean	PO Box 458	Adelphi	Ohio	43101	
KB8MDE	Shaun Miller	3469 Oakcrest Rd	Columbus	Ohio	43232	238-0918
WD8OBT	Tom Camm	1634 Dundee Court	Columbus	Ohio	43227	860-9807
N8OCQ	Robert Hodge	3689 Hollowcrest	Columbus	Ohio	43223	875-7067
N8OOY	Cheryl Taft	386 Cherry Street	Groveport	Ohio	43125	836-3519
N8OPB	Chris Huhn	146 South Hague Ave	Columbus	Ohio	43204	
WB8OTH	Perry Yantis	1850 Lisle Ave	Obetz	Ohio	43207	491-1498
KE8PN	James Easley	1507 Michigan Ave	Columbus	Ohio	43201	
W8PGP	Richard Burggraf	5701 Winchester So. Rd	Stoutsville	Ohio	43154	
KF8QU	Bob Tournoux	3569 Oarlock Ct	Hilliard	Ohio	43026	876-2127
N8QLD	Rick Callebs	P.O. Box 266	Jackson	Ohio	45640	
NZ8R	Greg Radcliff	1763 Hess Blvd	Columbus	Ohio	43212	
WA8RMC	Art Towslee	180 Fairdale Ave	Westerville	Ohio	43081	891-9273
WA8RUT	Ken Morris	3181 Gerbert Rd	Columbus	Ohio	43224	261-8583
W8RVH	Richard Goode	9391 Ballentine Rd	New Carlisle	Ohio	45334	
WD8RXX	John Perone	3477 Africa Road	Galina	Ohio	43021	
WA8SAR	Gary Obee	3691 Chamberlain	Lambertville	Mich	48144	
N8SFC	Larry Campbell	5483 Wescott Dr	Columbus	Ohio	43228	
WA8TTE	Phil Morrison	154 Llewellyn Ave	Westerville	Ohio	43081	
N8TUU	Maxine Duemmel	3488 Darbyshire Dr	Hilliard	Ohio	43206	876-5986
KE8U	John Greene	7585 Central College Rd	New Albany	Ohio	43054	855-1475
WB8URI	William Heiden	4435 Kaufman Rd	Plain City	Ohio	43064	1-873-4402
WB8VJD	Rick Morris	3830 Doyle Street	Toledo	Ohio	43608	261-8583
W8WAU	Jake Fuller	PO Box 117	No. Hampton	Ohio	45349	

KA8WGX	Martha Yost	234 Schofield Rd	Gilbert		SC.	29054	
KA8ZNY	Tom Taft	386 Cherry Street	Groveport	Ohio	43125		836-3519
N8ZTL	Gregory MacCartney	3469 Oakcrest Rd	Columbus	Ohio	43232		

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

FIRST CLASS MAIL

WHAT GREAT FALL WEATHER WE'RE HAVING.
I HOPE THAT AS THE WEATHER GETS COLDER,
MORE PEOPLE WILL PARTICIPATE IN THE NET ACTIVITIES
ON TUESDAY NIGHT!!!!!
