ATCO NEWSLETTER

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

ATCO WA8RUT REPEATER UPDATE

We've made some significant progress toward a better repeater. Items include 439 lower sideband input, 1250 transmit vertical polarization, reduced 439 desense and more. Check out the inside pages for the details!

ATCO

HAM IN THE SPOTLIGHT

This time the roving camera wound up at Phil Morrison's place (WA8TTE). Phil and I have known each other since our kids went to school together...but that's another story. Phil has an impressive hamshack to complement his ATV capabilities as you can plainly see. Since he hasn't been real active the last few months, I hope we are the spark he needs to at least share Tuesday nights with us. How about it Phil? We salute him for his years of faithful service to ATV.

ACTIVITIES ... from my "workbench"

Well, here's another newsletter issue staring me in the face. Each time I complete one, I wonder if I'll have enough worthwhile information to compose the next issue, but as the time passes, information rolls in. The big challenge here folks is **what** to publish that is the most worthwhile. Now, that's not to say that I'm inundated in excessive articles. Quite the contrary. I usually have to dig for material but the hard task is to know what material to dig for. The least available is construction articles so take note. I got a larger soapbox now and plan to be more vocal in the future! Bear with me. In the meantime, as long as I've got a workbench and soldering iron, this article will have plenty of material to report. As W8DMR would say, "Here we go" !!!

Well first, at the Spring Event we asked what repeater improvement would be most desired. The Dayton folks seized the opportunity to speak first. A resounding "more power" emerged, so we gave it significant discussion time. It went somewhat like this: Since more power on 427 would be very expensive even to just double , 1250 seemed to have the most room for improvement. As a result we decided to change the Heliax feeding the 1250 antenna from 1/2" to 7/8" and use the 1/2" for 427. This should pick up about 1.5 dB. Next, remove the horizontally polarized dual slot antenna (7dBd gain) and replace it with a vertically polarized 12 dBd gain antenna. This should give us about a total of 6.5dB added gain (1 P unit), right? Guess again! When we tested it, the combination yielded 1 dB less at my place and about 2 dB less at Dale's QTH (WB8CJW). The only place we picked up performance is with Ken's mobile (WA8RUT). He couldn't report dB figures in the car but he reports, "a significant improvement from what I saw in the past". No explanations, however, Dick (W8RVH) told me that horizontal to vertical comparisons yielded about 1-2 dB loss when he was conducting tests for the Military in the past at similar frequencies. Can anyone else shed more light on this rather complex topic? In any case, the guys in Dayton haven't been able to see the 1250 signal with enough regularity to say one way or the other but if forced for an opinion, they feel it's better. It's only an experiment, so we can put it back at any time or leave it this way if overall it's an improvement. Also read and digest the vertical vs horizontal discussion later in this issue.

To compound the 1250 signal strength matter even more, when we went up to the repeater to change the antenna, we noticed that the output was down from the normal 50 watts to 12 watts. We have at least one bad brick in the quad brick final amp array. I've sent it back to the vendor for repair. In the meantime, we've installed the backup amplifier which outputs only 15 watts so the signal strength reporting shall commence after we're back up to full power. Be patient, we'll eventually get there.

The other item we decided to work on is the severe problem of an FM 250 watt repeater output operating at 444.3 MHz less than a mile from us. Every time it keyed up our 439.25 input was severely desensed and lost the incoming signal. There is absolutely no way to filter out the 444.3 signal as is, so we decided to use lower sideband reception for the 439.25 input. Since all ATV transmitters output double sideband signals (except AEA) this should be no problem. As it turned out, we were right! In addition, to insure a clean input signal, we installed a 7 pole interdigital filter tuned to the lower portion of 439. Beforehand, I connected it to a spectrum analyzer and tuned it to give the best response to a 434 to 439 MHz signal while giving the best attenuation to 444.3 (the FM signal) and 432.75 (our 4.5 MHz sound subcarrier above 427.25 MHz). The combination works great and now we can receive 439 signals with almost no interference while the 444.3 FM signal is on the air! How about that...a success story the very first try. However, there was a bad side to this. Now we are getting a considerable amount of desense from our own transmitter on the 439 input. This was traced to excessive RF leakage on both the transmitter and the receiver enclosures. A generous application of copper tape along with tightening all enclosure screws cured the problem. Oh yes, a short braided coax jumper within our cabinet was replaced with an equal length of 1/2" Heliax which also helped noticeably. The 3 most important items toward a good repeater design are shielding, shielding and shielding!

With repeater site problems behind us for the moment, attention turned toward work on my rooftop camera design that I've been working on since early this year. I won't go into gory details here except only to say that "build from scratch" takes lots of time. I'm making progress but not without frequent interruptions to check out the operational capabilities of our lawnmower. I've got all of the mechanical parts I need but the time to machine them is getting hard to come by. I'm still planning to install it before the fall weather gets too cold. Stay tuned.

I haven't been the **only** one busy putting things together. Ken WA8RUT and Dale WB8CJW have been improving the remote site on the ABB roof. Now besides hosting the bulletin board tasks, a fixed position roof top camera pointed toward downtown Columbus is fully functional. On 147.45, punch in **285** to activate the system then **91** for a 439.25 MHz (upper sideband) input **92** for the bulletin board or **95** for the roof top camera (B/W signal only). When you're finished having fun, punch **286** to reset.

Well, that's all for now folks. Isn't it neat to be able to work on just enough projects to fill one page of this newsletter? I'll keep it going as long as we can keep up interest in our hobby. In the meantime, check in each Tuesday night at 9:00PM for current details.
Art...WA8RMC

FUTURE OF HAM RADIO...a Henry Ruh exclusive

The attached file contains a preamble, plus a petition for rule making filed with the FCC, October, 1996. It will soon be published widely in a major ham magazine. The specifics that are given as illustrations can change to meet specific goals and decisions by the VEC organizations who should framework the actual material. Hopefully, the approach and general intent will remain intact....to encourage ham activity, growth and individual continuing education. Nothing is "set in stone" and I am open to discussion on any area, and the purpose of this mailing is to begin discussion on this topic before the last ham store closes. We need to address the major problem of ham radio...survival and growth. Even if you disagree with the specifics, I would hope we all agree on the premise that we need to improve the quality and expertise of ham radio license holders, encourage exploration of our various hobby aspects beyond the HT, and "elmer" the hobby into the next century. The State of our Hobby.
An editorial and Rules Change Proposal by Henry Ruh KB9FO.

IS THERE A HAM STORE LEFT IN YOUR STATE?

Since October 1996 I have received notice from seven ham stores that have closed their doors. If this were to continue, we would be down to AES and HRO by the end of the year. Seventy year stalwart Henry Radio in Los Angeles, home to Tempo rigs, amps and the famous Henry line of HF amps (4K-2 and 6N2 and a 3004 currently reside in my shack) closed their doors this month. I spoke with Ted Henry Sr., who remarked that it was not an easy decision, but there just weren't enough hams buying gear anymore. Now that is in Los Angeles, the most ham populated part of the country, with Jun's and several HRO stores still operating. All total, over twenty ham stores closed their doors in 1996 and the first few months of 1997. Everyone is citing a slow down in ham buying. All say the "newbe's" buy an HT or a mobile rig and that ends their ham radio buying. Few are getting into higher grade licenses, and even less are buying big HF rigs. There are almost no new Novice licenses being issued. Not surprising. Most higher grade licenses are upgrades from pre no-code hams. How does this affect us? With less ham stores, there are less places to sell retail copies of ham magazines, and less places for people to discover ham radio. Less stores also means manufacturers need to advertise less, because sales are down, and there is less money to pass around, so our ad sales suffer too.

Less advertising and less retail sales means smaller income for ham magazines which means smaller issues of ham magazines or much higher subscription prices. NOT GOOD MAGEE! Ham radio is in a continuing downward spiral with no end in site.
This is not a new phenomenon. For those of us who have been around a while, I remember Doc's Radio Supply, W9HJS (Hairy, Juicy Sandwiches) on Milwaukee avenue in Chicago, a few blocks from Howard Electronics and a genuine junk shop that occupied a house on Milwaukee in Niles a mile or so away. There you could buy hardware or parts by the pound. I bought my first SWL receiver at Doc's, an SX99, later a 101A. As a kid I would take the bus to Allied Electronics on Western Ave., home of Knight Kit (Remember the R-55 and T-90?) On the east coast there was Lafayette Radio, on Jericho Turnpike on Long Island. And most of us remember Heath Kit and the Benton Harbor lunch boxes! A chain of Olson stores sold parts in little bags, "a kit of 3 SW101 switches 99 cents!" I worked in two of the stores while in high school, taking home a cool $100 a week (back when the minimum wage was $1.10) and a hefty 20% discount, which helped stock my test equipment and parts boxes and I had the time to build all sorts of neat stuff from the pages of Electronics Illustrated, Popular Electronics and others. I remember building a 2 meter regen receiver (two tubes) and a four tube (6AQ5 final) 160 meter AM TX. Five amazing watts RF output into a random long wire! I used a car radio with a retuned LO for RX.

I sat and thought about how in my ham life I have purchased over 300 radios over the years, most were from companies that no longer exist. National, Drake, Swan, SBE, Heath, Trio (now Kenwood), Hallicrafters, B&W, Muti-Eimac, Regency, Gonset, Hammerlund, Clegg, Polycom, Allied/Knight, Lafayette. The common thread among all of these was they were FUN radios. You could put in various mods to make them "better" or extend their range (Clegg FM27 was originally a 1 MHz coverage 2M rig, another Michigan ham and I modified them for two later 4 MHz of range! Imagine, going from an HR-2 6 channel rig (or a slew of modified Mot/GE/RCA/Link stuff) to a rig that covered the whole band! My, and other's early repeaters were usually modified stuff, Motorola G strips & Sensicon A's, T43GGV's and T-44's. Back then if you were in radio, you were IN your radio a lot!

Today my shack has few home brew items, and Kenwood, Icom and Yaesu populate the operating area. My spare time to fix or modify or build anything has evaporated into three hours of daily commute, 10-14 hour work days, and a couple hours at the computer trying to keep up with orders, subs, and getting an issue together, and checking the E-mail. With luck, an hour with the family to cook dinner and eat before its time for the 10 p.m. news and hit the sack. Although many do, I have no interest to get On the air and talk about computers. My computer effort currently is to covert to Mac from Windows. So I have a Mac sitting here, loaded with programs, 4 SCSI drives, and high end video card (Targa) and a bunch of other stuff, to try and learn computer video/graphics/web stuff, and maybe get more of the magazine done on the Mac to add graphics and stuff that my 486 doesn't do, like import video for on-air and taped material that I want to insert in the mag without taking a picture of the TV screen.

Who says computers are cheaper than ham radio? The guys on the internet say digital TV is cheaper than ham tv...I don't think so. $2500 for a new Apple computer, four Gbytes of SCSI HD's, and a $2000 Targa video card; $600 color printer, $500 monitor, a 8X CD ROM; I skipped the page scanner for now, Adobe stock probably went up three points when I got out of the store-- $9,000 in software: nearly every Adobe product plus things like Elastic Reality, Debabelizer, Logomotion, and video/audio editing software, Norton's, and a bunch of "free included with" stuff that I have no idea what it does or how to use it! Free CD ROM of 10,000 fonts! I have a hard time handling 200 fonts, and stick to 2-3 for this rag. You folks didn't like it when I tried to get fancy with fonts! 100,000 Clip art images, about five of which are useful for ham radio! It's been two months and I have yet to get my first CUseeme internet QSO. No wonder there is little time/incentive to play with ham radio. We're all tinkering on the internet, web pages and URL's. So I got to thinking. Whirrrrr, buzzz, clink clink. Last October (1996) I filed a 14-page Petition for Rule Making with the FCC. No RM yet. You may have read about it in W5YI report, and it is supposed to be printed in total, with twelve charts to explain it, in an upcoming issue of 73. What is it?

It's a proposal to change the nature of how we do ham radio licensing. Ham radio has changed severely, except for a small suburb near Hartford, CT which is still spending countless valuable resources to organize a new CB band at 144 and 444 MHz for more empty FM voice repeaters. The old incentive for tinkering, building, operating has mostly disappeared along with the ham stores, parts houses, Heath kits, and manufacturers. Incentive licensing didn't do us any good either. The time competitor for technical people is now the computer/internet. Why struggle to make one contact in Hamburg, when you can check into a chat room filled with people from Hamburg, for the cost of a local call, vs. a couple grand of radios/antennas, TVI complaints! But we still do things like WAS, DXCC, county hunters, fox hunters, and contests. There are still those who pound brass because they WANT to. There are still lots of NET's and there are the 2% of hams who still experiment, build, tinker, and play with more than FM and SSB. So let us change from a helter-skelter system of license classes which have little meaning for today's ham, to a more simple one that offers more and can offer accomplishment. No more boring tests, no more grinding out hundreds of hours of CW tapes. Let's change from a test oriented license system to an Achievement oriented license system. Those familiar with Scouts (boy, girl, or otherwise) or professional accreditation, or Pilot license requirements will recognize this idea right away. If you get N merit badges, you become an Eagle Scout, N hours and you are a private pilot, another series with an instructor and more hours and you get Commercial/instrument, more experience and you qualify for ATP. Well why not a Ham Radio version of "merit badges" . . . WAS, WAZ, DXCC, etc.? And what's with these names, Technician, Novice, Extra. Extra what? Extra fat? Extra Cost?

My proposal is based on three steps. Explorer, Adventurer, Expert. Who wouldn't want to claim to be a Ham Radio Expert, and has the FCC paper to prove it? Got your Ego working?

The entry license, Explorer Class, would be just that. Explore ham radio. Not a few narrow CW bands, not just VHF/UHF FM, but the whole range. HF, VHF, UHF, Microwave privileges, CW, SB, FM, Video, Spread Spectrum, whatever turns your crank. Explore ham radio and find out what you LIKE to do. Contests, DX, brass pounding, whatever. Not all the bands and privileges, but a good sampling, even on bands that work when the sun spots don't! A reasonable test on the rules, safety, and operating to get you going. Now you can do more than buy a 2 meter HT and act like a licensed CB'er. Get on HF and work a little DX, do some Oscar, fiddle with TV, SSTV, 160 meters. Get to experience a broad range of activities and areas to develop (self learning) knowledge and experience. More than knowing the Q code for FM repeaters.

Now along the way, earn your WAS, or a CW proficiency certificate, go to hamfests and read some magazines. This is called continuing education. Take in a seminar from the local ham club on new rules, or antenna/RF safety. Gain more knowledge. Have fun while you're at it. When you get 100 points in "merit badges" turn in your chips and get the Adventurer Class license. With the next license, you get full privileges and full power, only a few areas out of your rhelm. But now you can get DXCC, WAZ, 5 band WAS, work some major contests, write for magazines, maybe teach some new hams stuff, integrate your computer to your ham stuff, build a repeater, and enjoy the adventure of ham radio. Along the way, collect some QSL cards. After a while, you will have accumulated more "merit badges" to get to 400 points, and turn in your chips for the Ham Radio Expert Class license. Now you are Mr Know-it-all and have the wall paper to prove it.

Now your ham license actually STANDS for ACCOMPLISHMENT. You actually DID something besides study an ARRL Q&A license guide to up grade. Your incentive to operate is based on your desire to DO things and to upgrade to greater range of activities and interests becomes an out growth of your personal growth. No more one trick ponies. You won't be able to brag that you got your Extra and never plugged in a soldering iron. Now this is not for everyone. So let's grandfather those who want to stay where they are. They can renew their current licenses until they die. We won't reduce their privileges as the ARRL Incentive Licensing system did. But you can't upgrade to another "old" license class, if you want to upgrade, it will be to a new license. Just meet the new criteria. In other words, get out there and DO something. Get a feeling of accomplishment. Turn that county hunter certificate or SMIRK certificate or Sweepstakes score into something worthwhile, a higher grade license/call sign. Now the emphasis will be OPERATING/LEARNING/ACCOMPLISHMENT on the air. QSL cards will fill the mail boxes. Ham magazines will flourish with new

readers and writers, who will want more and have a reason to buy/build more equipment, and the VE's will be busy checking certificates rather than test scores.

The point will be that there is a huge pool of activities that will accrue "points" toward your upgrade. If you want to pound brass, your 35 WPM ARRL certificate will count, if you don't choose another area...high contest scores, author an article, get your DXCC, WAS, etc., work 3 CM, or 160 meters and get the QSL's to prove it. YOU CHOOSE WHICH CRITERIA you collect to get enough points to upgrade. There would be NO mandatory areas except safety and regulations which could be satisfied by attending a one day seminar at a ham club, hamfest or community college. Your mailing labels for five years of ham magazines could be proof of continuing education. Get the idea? We have to change the nature of ham radio to compete with other time interests. We can do that by encourage OPERATING not book/brass study. Besides, operating IS the FUN part of ham radio anyway! Let's encourage it!

Invariable there is the question, who determines how many points or merit badges. Answer, the VEC's joint committee. Each ham radio organization that wants its operating certificates considered, submits the criteria for earning the certificate to the VECJC who determines how many points it is worth. Determines how you ask?

The whole point is each "evidence" of operating has some value. The point value should be assigned by difficulty and breadth of experience each represents. Thus a WAS has x value, a DXCC has y value. There is always someone who will raise the question, "I got my WAS by using a voltaic pile and a frog's leg to work the key so it should be worth more." Well you had better have the frogs leg and there had better be calluses on its flipper that match the knob of the key! Sorry, just because you could create a unique circumstance in which to achieve the WAS (or whatever) doesn't give it any additional value. However, if the WAS was for 50 states on only 2 meters and only from Oscar, Vs a bunch of HF contacts on 4 bands with some 6 and 2 meter stuff thrown in, there is a difference. The first gets the plain vanilla 5 points, the second gets 7-8. Why? Because the first represents only one operating mode and patience. The second represents (likely) several modes, several propagation experiences and therefore has more breath to it. It gets the extra points because of the additional modes and propagation methods: 5 points for WAS, and 2-3 of the 5 points for operating 7 or more bands or for working 7 or more modes. Keep in mind this is just an illustration, not necessarily the final say so on how many points for any particular operation, yet.

Now we need to do one more thing. We already started. There are a lot of HAM WEB PAGES, on the internet. These are great starting places for those who stumble over them. Let's do it one better. Let's tie the HAM WEB PAGES to each other (as some have) and let's ADVERTISE ON THE WEB and elsewhere, the FUN stuff on ham radio . . . not, "The Tennessee Valley Indians Home page is located at HTTP:\\ www.TVI.com," but put key words in the title so search engines FIND us. How about RARE CONTACT WITH ALIENS (DX), INTERACTIVE TELEVISION (SSTV and ATV) ANTIQUE RADIOS (tube rigs) etc. RADICAL RABBIT EARS (antennas). CURE SPECTRUM SPREADING . . . Get your imagination going and let's SELL ham radio to those who are looking for the next challenge. And yes, you can tie the internet into your local repeater so that you can HT from LA to London to Sydney. Do it with video too!
Henry...KB9FO

DAYTON ATV PARTY COMMENTS

The Friday night ATV meeting was Standing Room Only, and will be repeated next year, same time, same place. Excellent presentations by Bill Parker W8DMR, on using the mods to the Wavecom including a live demo. HATS representative Fred Juch told the group about their system, and plans. John W3SST spoke on the CAATN group (York, Philly, Baltimore) their linking efforts and John Jaminets idea of a national ATV organization. Also shown were balloon/rocket videos, Even Bill WB8ELK managed to make it! A good time was had by all.
Henry ...KB9FO

I agree that the party was fine. Just too short. Maybe we should plan both Friday and Saturday night affair. Maybe a catered dinner on Friday night with some talks afterward . On Saturday night similar to what we had this year. Just a thought. If we are successful on the National Organization they could plan one of the nights. Two of the people beside myself that were there were W3WVV and his son. They were too tired to stay long. If you want to get a list of attendance I can supply you with a list of people I know were there and you could cross check it.
John ...W3SST w3sst@juno.com

Art, I want to thank the (ATCO) Club for their support. I already have one speaker for next year. Henry said that he counted 114 people that came and went. I will try to check into the net tonight. Once again thanks for the support.
John ...W8STB@juno.com

SATELLITE 10GHZ I.F. FREQUENCY LISTING

The satellite receivers that we use to receive the 1250MHz repeater output are actually designed to work with the 10GHz satellite TV frequencies. The LNA amplifier on the satellite dish converts the 10GHz input from the satellite to an IF frequency range of 950 to 1450MHz. This IF frequency is then fed to the satellite receiver which converts it to audio and video. It just so happens that 1250MHz is right in the middle of this range so we can use the receiver directly connected to an antenna to receive the 1250MHz repeater output. However, there are a couple of points to remember. First, the receiver must be used in the "video inverted" position because when used with an LNA, a signal inversion takes place in that unit. If we use it direct, the inverted video must be used so be sure to get a receiver that has "inverted video" capabilities. Second, because the receiver is intended to be used after an LNA which has plenty of gain, most receivers lack sufficient gain to provide an adequate signal without a 1250MHz preamp. Down East Microwave has a nice one quite reasonable that works great! After that, we need to know which receiver channel to tune to. The following table will help but remember that some receivers may tune one higher or lower channel than listed for optimum results. Finally, the best news! These receivers are very plentiful on the surplus market for as little as $20 but beware...**some don't work!**

CH.	IF FREQ	CH.	IF FREQ	CH.	IF FREQ	CH.	IF FREQ	CH.	IF FREQ	CH.	IF FREQ
1.	1430 MHZ	5.	1350 MHZ	9.	1270 MHZ	13.	1190 MHZ	17.	1110 MHZ	21.	1030 MHZ
2.	1410 MHZ	6.	1330 MHZ	**10.**	**1250 MHZ**	14.	1170 MHZ	18.	1090 MHZ	22.	1010 MHZ
3.	1390 MHZ	7.	1310 MHZ	11.	1230 MHZ	15.	1150 MHZ	19.	1070 MHZ	23.	990 MHZ
4.	1370 MHZ	8.	1290 MHZ	12.	1210 MHZ	16.	1130 MHZ	20.	1050 MHZ	24.	970 MHZ

Art...WA8RMC

ROCKOON LAUNCHES SUCCESSFULLY OVER THE ATLANTIC.

The HALO team met at the launch site in Hampstead, NC in the wee hours of Sunday morning, May 11th. It was very cold (frost collected on the equipment) with absolutely no wind. Perfect conditions for a balloon flight! As the rocket crew tested out the payload and command electronics and fueled the rocket with nitrous oxide, the balloon crew unfurled the delicate plastic envelope on the protective ground tarp, attached the Kjome launcher and started the inflation process.

As the sun poked up above the horizon, and with just 30 minutes to go before our FAA launch window closed, we ran across 2 nearly empty tanks of helium. Concerned that we would not have enough helium in the balloon to lift the rocket payload, we searched Hampstead and nearby Topsail Beach for helium (not an easy task early on Saturday morning). It turned out the local Food Lion store had two tanks they used for party balloons and sold them to us. This saved the day and allowed us to achieve final flight lift. The rocket crew lifted the payload and stretched the lines tight, the fill tube on the balloon was tied off and the call to the FAA went out for imminent lift off. With just 5 minutes to go before the deadline, we released the balloon at 6:59 am EDT and the rockoon headed up smoothly into the still morning sky on its way to the stratosphere.

Spectacular color video of the balloon and the side of the rocket launch tube could be seen in the command tent. The rocket video was viewable on another monitor, but little could be seen due to the protective plastic wrap around the gondola.

The GPS telemetry downlinked via packet radio in APRS format started to get weak after the rockoon exceeded 23,000 feet. The signal faded completely into the noise and we unable to record any more usable position and altitude reports from that point onward. We think that the internal antenna for the packet transmitter put most of the radio signal up and down, but very little signal made it towards the horizon as the payload headed out nearly 120 miles out over the Atlantic.

At 8:21 am, we calculated the estimated altitude of the rockoon based on the ascent rate to be around 60,000 feet. I said, "Since we are now above 49,000 feet, the barometric rocket safety switches are now armed and the rocket can be fired at anytime." Of course, we were hoping to reach at least 100,000 feet before firing off the rocket. Just 30 seconds later, I happened to be looking at the video of the balloon envelope and thought that the balloon looked pretty full. Just then, one of the seams tore wide open, dumped out all of the helium and the balloon just folded up into a long streamer of plastic! As the rocket and gondola dropped rapidly, I shouted out to Ed KE4ROC, "Fire that rocket NOW!". We had just over a minute to issue the fire command before the safety switch disarmed the rocket at 49,000 feet.

Ed keyed down the 2 meter transmitter and anxiously entered the firing code via touchtones. Nothing happened...He tried another time...nothing...and then a third (we had only seconds left before the safeties cut in). All of a sudden there was a bright flash and a cloud of smoke and the rocket leaped out of the gondola and off towards space. Bits of plastic tape and the plastic covering shredded

off and fluttered past the camera view as the gondola continued its rapid descent. Miraculously, the camera had survived the rocket exhaust blast and continued to work flawlessly until the gondola splashed into the Atlantic Ocean.

We were treated to flashes of video from the rocket for about 30 seconds showing tantalizing views of the curve of the Earth. Since the rocket was spinning around, the ATV signal fluttered in and out and made it difficult to lock onto a good picture. After that, the video signal ceased and the rocket parachuted down into the Atlantic. We estimate our peak altitude at 38 nautical miles. Both the gondola and the rocket splashed down about 120 miles east of the launchsite and 50 miles from the nearest land. Since the GPS signals were unavailable, we were unable to direct the chase boat to an accurate splashdown location. The rocket and gondola were very small straws in an extremely large haystack and as a result, the chase boat did not recover the payloads.

Although we did not achieve space (defined as 51 nautical miles in altitude), we did set several records: The first amateur launch of a rockoon (rocket launched from a balloon), the highest launch of a hybrid rocket (hybrid referring to the nitrous oxide/asphalt fuel combination), and the highest flying hybrid rocket to date.
Bill Brown...WB8ELK bbrown@hiwaay.net

MORE ON VGA TO NTSC CONVERTERS...

VGA to NTSC Converter: AITech DTV to NTSC Converter
AI Tech 47971 Fremont Blvd, Fremont, CA 94538 internet; info@aitech.com

AITech are the folks who have announced they would make a DTV to NTSC set top converter for $500. They also happen to make a very nifty VGA to NTSC converter that is about the size of a small HT. Called the Pocket Scan Converter PSC-1106, it plugs into the monitor port of your DOS/Windows computer (Mac also available) and outputs NTSC via a RCA jack, or S video jack. It comes with an RCA to RCA jumper cable, also an S video jumper cable, a software floppy, and a 9 volt 500 ma "wall cord" power supply. It works with NTSC OR PAL (Hey how about that!) and with picture in picture TV's! Guaranteed 16.7 million colors (providing your program supports that) and flicker free. I don't have a price, as mine came with a field TV prompter system, but it does not look expensive. The software provides positioning of the output image, selection of TV size display or VGA size display, and 4 video filtering options to obtain the best image. Obviously if you have single pixel lines or have made NTSC/PAL invalid colors in your computer display, they will be converted to whatever the color matrix can make from the input, and single pixel lines or dots may flicker or not show because NTSC/PAL is interlace display and computers are sequential display. Screen display location (centered, anchored to upper left corner, or otherwise) is adjusted in one line or one column steps using your mouse on a 4 way arrow. The position can be saved so you do not have to do it each time you power up. Regular VGA is 16 colors from a palette of 262,144 colors. Super VGA video cards display up to 16,7 million colors. VGA resolution is normally 640 pixels per line and 480 lines, Super VGA can be as high as 1280 x 1024. NTSC is usually 525 lines (42 are not active video) and PAL is normally 625 lines (counting the inactive vertical interval as well. Screen refresh rates for NTSC are usually 60 Hz, PAL, usually 50 Hz, and VGA 72 Hz. Thus any PC video will lose something in the conversion process, it is unavoidable. However, at normal viewing distances the picture is perfectly acceptable.
Henry...KB9FO

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434 MHZ QUESTION AND INTERESTING SIDE COMMENTS...read and take note.

I just picked up my 2nd ATV transceiver. This one offers 434.000 as well as 439.25. I live in the area in Michigan where we aren't suppose to use 420 thru 430 because we are so close to Canada. Now, I was told on the air last night that because of that, we can't use 434 only 439.25! Now from my understanding of an ATV signal, it is supposed to be 6 MHz wide. Well, from 434 that would cover 431 thru 437. Am I wrong in my thinking? If it's bottom is 431 then we should be safe using 434 in this area, right? I would hate to think I have a freq. in the transceiver I can't use at all. I was told by others in town that 434 is fine for us to use. Any ideas?
Timothy Pickett...KG8OC E-Mail Address: tim@kode.net Web Page Address: http://kode.net/~tim/home.html

Hi Tim!
You ask a common question and I will attempt to answer it without a lot of confusion. Yes, a normal commercial TV signal is 6 MHz wide and the picture carrier is 1.25MHz inside the lower edge of the bandpass, I.E. the carrier you can measure on a frequency counter. However, NO AMATEUR TRANSMITTER COMMERCIALLY MADE (That I know of) is TRUE VSB (vestigial Sideband) and so you have a Double Sideband AM transmitter with an audio subcarrier 4.5MHhz above and BELOW your main picture carrier making your real bandwidth about 9MHz!!! Yes, AEA did make a transceiver that claimed to be VSB but most of them have only about 20Db of lower sideband suppression (if that) and the rules regarding emissions within an amateur band say that all inband emissions outside the desired signal must be down by 40Db or more and Out of Band emissions down by 70Db or more. If your picture carrier is at 434MHz then you have an audio subcarrier that is down by 15 to 20Db at 429.5MHz and the desired one at 438.5MHz. Unfortunately that won't cut it unless you make up a Hi Q type of can filter and use it as a suck-out for the lower audio sub-carrier. One thing more I

thought you might like to know. Here in Arizona we use the 434MHz freq. as our repeater input with 421.25 as the output and have tried all manner of things to suppress the output of the energy in the lower audio subcarrier and keep the emissions clean with mixed results. We started off with a commercial cable type modulator built to the channel 57 (421.25MHz) output and extremely clean, but when we ran its low output threw an amplifier, the lower sideband and subcarrier were re-inserted again and we went NUTZ trying to figure out why or how. As it turned out what we were seeing was INTERMOD! If you use a TRUE class A amplifier that is dead nuts linear with extremely low intermod (forget the Motorola or Mitsubishi bricks, class AB2 or B) then you don't get the intermodulation distortion products generated and the signal will stay clean. Other wise, you end up burning up about half of your output in a filter system that still interjects it's own level of intermod and not gaining much. Sorry about getting a bit techie here but it is a subject very close to home for me as I am on the Tech Committee and current President of the AATV Club (Arizona Amateurs on TV) here in Phoenix especially now that we are looking at putting up our 1241.25MHz output and trying to figure out how to get the filtering necessary without loosing 4 Plus Db of signal. The 23cm amps get mighty expensive. Anyway good luck with your ATV projects and if you send an e-mail and we'll try to help...
Mike Baker...K0QZ AATV k0qz@primenet.com

70cm ATV is AM double sideband unless you add a VSB filter in the antenna line or run one of the old AEA VSB transmitters without an amplifier. The lower sideband sound with 434 video carrier is out of the A line bottom of the band at 429.5 MHz Your other option is turn the sound subcarrier injection to zero and rely on two meters for the voice side. VSB filters run $220 to $279.
Tom O'Hara ...W6ORG P. C. Electronics tomsmb @aol.com

Tim, I used to have my ATV repeater here in Michigan as 434 on the input. You can use 434 BUT you need to use an additional piece of equipment called a VSB filter. Your math is correct on the freq. range but our signals are AM so there is two sidebands (a 12 MHz signal) most people use the upper but there is a lower. The VSB filter knocks down the lower side so your signal is very weak below 430 MHz. I hope this helps.
Chris...N8UDK

Hey, what city do you live in? The video carrier is not centered in the 6 MHz wide channel, it is offset 1.25 MHz from the lower edge, provided you have a vestigial sideband filter. On the other hand, the sideband energy needs to be only - 26 dBc to be legally in the band. This is accomplished with no effort on your part except to not have a Sweep signal for video!. Only your lower side sound and color sidebands could have enough energy to be above the - 26 db figure, and a simple trap or roll off filter will cure that.
Coaxcable...Coaxcable@aol.com

This is a great example of how we can help each other! In Houston, HATS uses 421.25 as an output. To stay legal we had to also fix our audio subcarrier. We killed it inside the PC electronics exciter and installed a GE Master Exec II 440 Commercial radio as the audio transmitter. It was modified by a person knowledgeable about such things to be much more wide band than original and the power was cut in half. It also feeds a separate antenna. This makes a clean audio carrier on 425.75 MHz and has been key down for over a year. We also use an interdigital filter after our Mirage D100ATVR amp. together the signal looks very clean on a spectrum analyzer. On the other thread, the discussion was that we should coordinate to keep links out of certain places in the ATV signal. In Texas the frequencies used for links are not published. Therefore other than watching the interference on our TV we have no input on what link in causing interference or who owns it. This again points out the flaws of a closed repeater/linking system. Please do not read this as a flame but as a technical point that must be addressed to help resolve technical problems. We have had a lot of help from linking groups in Houston, but as everything has settled down we seem to not be causing interference but must put up with it.
N5JXO

N8UDK wrote that there are two sidebands - a 12 MHz signal. Not true. The highest significant sideband is the FM sound subcarrier at +/- 4.5 MHz. Therefore the worst case occupied bandwidth would be about 9.1 MHz. Too many erroneous bandwidths get thrown around for ATV but later get quoted as fact by others who want to eliminate ATV from the band.
Tom O'Hara ...W6ORG

I stand corrected and will be more careful next time I spurt off bandwidth figures. One side note, using the standard 434.0 USB gave us much grief with repeater links trashing our picture. When we went to 439.25 LSB it fixed most of the problems.
Chris...N8UDK

That's the problem most states have, the Frequency coordinator will not tell you where any of these "secret" links (so buy a scanner and listen, or pop on your Spectrum analyzer and watch!) are, they just refuse your coordination and just say you will interfere. Hogwash. ATV does not interfere with FM voice period. The use of the separate transmitter for audio is a great one, and solves also

the triple beat problem (herringbone) in common amplification systems. And if you use a separate sound transmitter as HATS is doing, the next significant sidebands are lower side color, which are generally too low to worry about anyway, so you are back to 6 MHz bandwidth anyway. with a bump at -3.58 from video, so at most 8 MHz bandwidth, but at least 5 MHz of that have so little energy as to be insignificant to other users.
Henry...KB9FO

Hi Henry. Two things: first, the organization that does much of the linking in Texas, Armadillo Intertie, has always cheerfully shared the frequency and location of our links with the ATV community. It is true we don't want those frequencies published in the repeater directories or given out by the Texas VHF-FM Society. Second, on your "Hogwash" comment, you have obviously never heard how video buzz sounds in an FM receiver. It generally makes the channel unusable (and especially unlistenable).
Joe Jarrett...K5FOG joejarre@netcom.com

Henry While ATV is usually the one to be interfered with it is not always the case. It does not take much energy to key up a COS repeater with a video carrier. ATV needs to be in a slot by itself. Without other modes.
ED Mellnik...WB2QHS

I stand corrected and will be more careful next time I spurt off band width figures. One side note, using the standard 434.0 USB gave us much grief with repeater links trashing our picture. When we went to 439.25 LSB it fixed most of the problems. That worked for my repeater in Chicago also.
Chris...N8UDK

I have only heard/seen that at very close range (a mile or less) and any PL use would squelch the receiver and an incoming FM signal would bury the AM "noise". And the FM receiver must be close to the video carrier in frequency (usually within 1 MHz or less) If you have a documented case which does not involve defective equipment I would be glad to publish it.
Henry...KB9FO

Link Vs ATV problem in some areas points up the necessity for Spectum Management rather than individual mode coordination. There is no need for anyone to know the frequencies and class of links if the coordinators don't put them in the ATV passband to begin with. A sound technical bandplan agreed to by all is the logical solution but it seems that is only possible on Vulcan. All modes need to be part of the coordination council & process unless one enjoys all the hassle as a hobby rather than playing with your radios.
Tom O'Hara...W6ORG

SPRING EVENT MINUTES

If you did not attend the Spring Event this year...SHAME! We again had a good time and corresponding good weather. That's two times in a row but let's not talk about that one! I'll continue. This year Rick WA3DTO couldn't attend so he asked me to fill in for the food. Hope it wasn't disappointing...I guess the fact that it was all gone says something. I tried submarine sandwiches this year which seemed to be well liked in addition to the regular chicken and such. Any new suggestions for the Fall Event?

I counted heads for a total of 23 people. Pretty good. The door prizes were equally plentiful. Again this year we dipped into the treasury to purchase a 1200 MHz preamp (won by W8STB) and 1200 MHz antenna (won by KB8WBK). Did you get the hint that we're promoting the 1200 band? Other prizes included a b/w camera (WA8RUT),video sampler (WA2PCH), b/w camera/lens (WB8CJW), Hoffman nema 12 box (K8AOH), pocket reference (W8RVH), pocket reference (N8CYV), mug (WA8KQQ & WB8DZW), power supply (K6GUC), Newark catalog (W8PGP), software (KC8AGZ) as well as a number of hats! Just read and weep for all of those who didn't attend.

We had a good eyeball for a while then settled down to absorb food and have a short business meeting which included an election of officers. I guess you're stuck with the same officers again this year. (Are we doing a good job?). Discussion topics included a vote to donate $100 for the Dayton ATV party, repeater progress, balloon launch details, 2400 MHz details from Ken and others.
Art...WA8RMC

TECH TALK...Let's learn something technical

This is a new section I decided to add to each newsletter dedicated toward broadening our technical knowledge about ATV instead of the "Plug & Play" situations many of us are in. Since I'm not the expert on many ATV subjects, I'll try to extract valuable information from those of you who speak with authority. But sometimes it's not quite black and white. Many viewpoints come into play as is the case in the following situation. It fits the bill quite nicely though because, as many of you know, we changed the repeater input to LSB (lower sideband) operation. The reason is simple...to hopefully reduce the nearby interference. But WHY can we do this? Read on and be fully enlightened (or more thoroughly confused). Most of the discussion is about transmitters but...well, you'll get the message! Later in this issue, read the section about interference, put the two together and then you'll see the situation we're in! WA8RMC.

A little "input" about 439 MHz lower sideboard operation.

Question?

I need a little help on 439.25 LSD input. I have seen some comments on this subject in the past. I understand the protection for the rpt rec input from the 440 FM repeater outputs. Now how about the users 10 watt transceiver. I bet most are DSB. Now if this is true then the Video from the user may buzz the FM rpt output frequency. Are there sideband filters used for the local users transmitter. I remember there was a transceiver several years ago that did this but I believe they are out of business.
Johnny Stigler...WA5ZRQ jstigler@OnRamp.NET

Answer(s):

TV transmitters are for the most part DSB and work with ATV repeaters that use either upper VSB or lower VSB. Affect on FM repeaters is the same. The FM repeaters are not generally affected unless they are within 200 kHz of the color subcarrier at 442.83 or 100 kHz of the sound subcarrier at 443.75 MHz or below 440.25 MHz. Even if the FM voice channels are within the subcarriers range, the levels are quite low even if the ATV beam is pointed at them - color is no greater than 22 dBc and the sound is no more than 15 dBc. Random video sidebands are down 40-50 dB or more +/- 1 MHz from the video carrier. VSB filters are not required for most all users unless quite close to the FM repeater. VSB filters are put in the final transmit amplifier output line and run $279. This will add 20 to 35 dB attenuation to the unwanted subcarriers. I am a frequency coordinator in So. California (SCRRBA) which has probably the highest communications density in the USA and ATV rarely ever gets into FM voice systems. I don't know of any ATVer that has had to add a VSB filter to his home station due to being too close to another mode user. The only problem I know of is one weak signal operator who is abut 1/4 mile from an ATVer and they work out the operating time between them on the local ATV two meter channel. The problem here was one of just overload rather than the type of transmitter. Also note that we coordinate FM links up to 1 MHz of the 426.25 MHz ATV simplex frequency. Interference is more common to ATV from FM voice if close by and within the ATV receiver pass band or the signal strength is not down the IF filter attenuation curve far enough.
By using 439.25 Lower VSB the problem will not be to the FM repeaters above 440.25 so much as the satellite users transmitting in the 435 to 448 segment. But this is what the ATVers, here at least, have accepted. There are occasional hits in the video when certain satellites are in view and the antennas are on the horizon and toward the ATV station. It doesn't last too long, and we have asked the satellite users to drop down to 432 to do their simplex rather than stay on the satellite input for local contacts, so it doesn't happen too often. I know of no complaints from satellite users. If any occur, each knows the others two meter frequency to work it out. SCRRBA has a technical committee made up of no more than two technically savvy people representing each mode and interest to work out engineering band plans and technical interference problems that might come up later. Rather than feuding we have tried to work out sound technical solutions which has resulted in the fun of working all modes.
Tom O'Hara ...W6ORG tomsmb @aol.com

I am not sure why you would want to place the VSB filter at the output of the transmitter. VSB filters are available for standard TV I.F. of 45.75 MHz for $75. These are SAW type and MUST be used at a low-power stage (which the I.F. typically is). I am not sure on the design of the transmitter you are talking about, but I will assume it is a cheap one (cost only) if it doesn't have a standard I.F. Some I have seen don't use an I.F. at all. They simply apply the video (after distorting the sync) to the power supply of the final amplifier. That would prohibit the use of the mentioned SAW device. Ohterwise there is no reason to send out the dsb (am) signal. If there is interest in these devices I will send a message with sources for them.
Randy...KN4KB randysmith@rica.net

You'd want the VSB filter at the last point before the antenna feed so that any IM products which will make the LSB return, are still filtered out before the antenna. Otherwise, any added amp will just add the lower SB's back in again, and your efforts is for naught.
Henry...KB9FO

Question was, why not use a filter at a lower level in the transmitter, like at 45.75 MHz and then mix and amplify up? (like AEA did) VSB filters placed in early stages of a transmitter are ineffective in amateur ATV transmitters. The intermod of amateur amplifiers just reinserts the opposite sideband. Sure you could spend big bux for extremely linear amplifier stages, but this is way out of most hams

budget to do the same thing as putting the VSB filter in the antenna line. Motorola has a 10 watt amp that is very linear with good triple beat specs but is almost $2000. SAW filters are good for up to 10 mw input but have very high insertion loss - 20-26 dB. So you would need a very linear amp chain with 40 to 50 dB gain to get to 10 watts out and maintain VSB. There are lots of devices for not too much money that are linear enough up to about 1/2 watt, but after that, hold on to your pocket book.
Tom O'Hara ...W6ORG tomsmb@aol.com

Due to the nature of how an amplifier works, if you apply the VSB filter before the final amp, the final amp (or *ANY* amp stages after the VSB filter) will regenerate the missing sideband. Just the nature of AM modulation. The VSB filter in a transmitter needs to be between the final and the antenna.
David Cooley...N5XMT cooldave@ipass.net http://www.ipass.net/~cooldave/

This may be somewhat true....but Test I ran several years ago with AEA VSB...Without a filter and putting an amp after the AEA VSB transceiver the measurements I took still showed the lower sideband 37 db down. This is contrary to the over simplified statements that an amp reinserts the lower sidband.
Ed Mellnik ...EMA Video ema@teleport.com

If the amp is a true linear amplifier, it won't reinsert the missing sideband. The products are reinserted due to the non-linear nature of most of the amps we use for ATV. Commercial TV Transmitters don't modulate the finals the way we do with our ATV transmitters. The modulate at low level and use VERY linear amplifiers after that. Filtering and careful tuning of the amplifier stages then only have to contend with a minimal amount of signal due to the unavoidable distortion in the amps.
ROD LANE...ESPI35E@prodigy.com

That's going to depend on the quality of the amp... For most amateur use, I know I can't afford top of the line, and most of mine is home-brewed... Unless you are running the top of the line, absolutely 100% linear, you'll have the sideband back... Also, take commercial TV broadcasting stations as examples... They spend Mega-Bucks on their transmitting equipment, and their VSB filters are the size of mobile homes, and go between the final and the antenna, soaking up approximately 50% of their transmitters output... If they could put the VSB filter before the final, it would save them dollars not only in cost on the filter, but also on power... their transmitter would only have to be half as powerful for the same ERP.
David Cooley...N5XMT cooldave@ipass.net http://www.ipass.net/~cooldave/

“Just the nature of AM modulation.” It’s the nature of any amplifying device! All tubes, transistors etc. generate intermod as a function of amplification because they are not linear devices. Even the most linear of designs generate some IM products. Only careful circuit design and device design minimize it. If you want linear, low distortion for AM signals, you typically operate at 25% of rated power or less, or have sophisticated circuits to predistort the signal to cancel the device distortions to get linear results. Neither is amateur radio practice! A typical MRF device has IM products of 26 dB down or more. Even the specialized class A devices spec out at not much better than -36 dB IM, and achieve -56 or better by under driving and low output (a 10 watt device operating at 3 watts or less). In tube land, a 5 KW tube runs at 1.1 KW for low IM for video service. We, of course, crank it up till it smokes! FM signals also generate IM products (as does any modulation mode) and the 3rd, 5th, etc. IM products can be seen as clearly on a spectrum analyzer as smaller amplitude sideband groups adjacent to the desired sideband groups etc. “*If the amp is a true linear amplifier, it won't reinsert the missing sideband*.” No such thing exists. Not in broadcast or ham land. “*Commercial TV Transmitters don't modulate the finals the way we do with our ATV transmitters. They modulate at low level and use VERY linear amplifiers after that. Filtering and careful tuning of the amplifier stages then only have to contend with a minimal amount of signal due to the unavoidable distortion in the amps.*” Note the words UNAVOIDABLE DISTORTION. That’s why broadcast gear has mucho circuits to tune the signal errors out, maintain phase and amplitude linearity, insert receiver correction, correct for transmission line or waveguide losses and non linearities, remove video IM from audio subcarriers, etc. etc. Clean amps, yup, and at a huge price tag. “*Commercial TV Transmitters don't modulate the finals the way we do with our ATV transmitters*.”
RCA did, using a slew of 6146's to plate modulate the RF amplifier at 1 KW.
Henry...KB9FO

FREQUENCY INTERFERENCE PROBLEMS...Yes! It seems to be getting worse!

The following are the comments from a few well respected people in ATV about interference involving our ATV signals, the bandwidth it requires and where to put it! Follow close and you can see the pros and cons of the spectrum our signals need.

Ralph Fowler, N4NEQ starts by responding to previous comments by various people a short time earlier and states,
"At various times, Fred, Henry KB9FO, Ed and others wrote about other signals and links interfering with ATV:
Fred talked about the "secret" links and closed repeaters.
Henry made the categorical statements (but at least he said ***most***)". "*That's the problem most states have, the Frequency coordinator will not tell you where any of these "secret" links (so buy a scanner and listen, or pop on ur Spectrum analyzer and watch!) are, they just refuse your coordination and just say you will interfere. Hogwash. ATV does not interfere with FM voice period. The use of the separate transmitter for audio is a great one, and solves also the triple beat problem (herringbone) in common amplification systems."*

Ed says, "*Henry, while ATV is usually the one to be interfered with, it is not always the case. It does not take much energy to key up a COS repeater with a video carrier. ATV needs to be in a slot by itself. Without other modes."*

Even Joe K5FOG (who really IS a reasonable guy) jumped in with his views expressed almost the way I would have done it.
He says, "*I have been holding off on making comments because I thought that most of the folks involved really understood the big picture, but it looks like they either don't, or else they just refuse to recognize it.*
"Now I'll say my piece:
1. The bands are getting crowded and all of you know we must share.
2. Most of you know how much bandwidth we do (or have the potential to) occupy in different parts of the USA.
3. If you have done the homework you should be doing as Repeater Owners, you also probably know how much your local coordinator does or does not have about these links and packet, etc. In many areas, he DOESN'T know about a lot of them, because many REPEATER COORDINATORS do not coordinate links. About the best thing they know is the portion of the band that has been allocated for such uses.

As ATV users (and repeater owners) we will not get far making hostile statements, threats, and unreasonable demands. We gotta change! As long as frequency coordinators and other users see behavior of this type, it will perpetuate the very problems that you are having now.
Work with the folks who coordinate repeaters, try to find out who the links are. If something is interfering (I mean really interfering- not that they are just in the passband), then explain the problem, educate them if required, and offer to help them move if needed. Don't antagonize folks. Certainly you know that unless they are real close, passband signals don't really do all that much unless close to the Color or Sound frequencies. Try to get the link users to use opposite polarity from you when there is a problem. Or take the leap and go CROSS BAND. You'll see most of your problems go away. Your users will be able to go duplex without duplexers. You can put the $$$ you spend on filters for the users (you DO use VSB filters on all 400 transmitters, don't you?) into nice enhancements for your repeater system and for toys for the shack. HATS already knows the benefits!

We here in Atlanta have known the benefits for a long time. We have 4 ATV repeaters all within 80-100 miles of one another. They all output in the 420-430 part of the band. All but one are either on 1000 ft Mountains or a 50 story building. They are all crossband. Two of them are Co-Sited with very active 433 MHz 56k and 1.2k packet backbones and numerous UHF repeaters and link receiver/transmitters. We have major satellite users here, including one who calls a 7 state SSB simplex weak signal net on UHF.

There are NO PROBLEMS. Everyone gets along. The few problems that there were got solved by cooperation and using separate sound transmitters or by rebuilding the nasty Mirage ATV repeater amp. One repeater had a custom amp built out of 3 linear bricks. Less than 400 bucks, linear, clean, and twice the power of the nasty Mirage.

Yes, my sig. will show I work with SERA. I was ASKED by them to help advise on things that they were not too familiar with (like ATV). When I don't know the answers, I ask others such as Kip Turner, Tom O'Hara, and even Henry. We have worked through several problems and resolved all of the issues I know of. There is no hostility that I am aware of between any ATV repeater owners or users and any other interests anywhere in our 8 state area! Sometimes it is hard to keep the peace. Accusatory magazine articles and one sided statements that no longer hold water are not helping. Give a little, change your attitude, and cooperate- don't instigate!
I have my flame-proof underwear on, so turn up your burners and fire away".
Ralph Fowler... N4NEQ SERA Amateur TV Technical Advisor. rwf@mindspring.com http://www.mindspring.com/~rwf for APRS,

Ok, read the following and we find out just how other people feel about Ralph's analysis. Here we go! Let's start with Henry.

"SERA is a very fine organization and an exception to the ATV blaster F/C's of MACC, and MACC does have some PRO ATV F/C's, but they seem to be in the minority since MACC is the group trying to oust ATV from 70 cm completely, as published in their own materials, statements, etc. Their original statement was the de-coordination of ALL ATV repeaters, then a year later changed that to ACTIVELY DISCOURAGE ATV REPEATERS. Certainly is a bow shot if ever I read one.

There have been absurd rejections of ATV repeater coordination requests in IL, WI, WY, AR, LA, and many other states because the F/C is usually an FM only knowledge person, and has no interest/knowledge of video or many other modes, thus the SS folks and packet folks also tend to form their own F/C groups and avoid the FMers like the plague. Southern California is the most congested area in the country, and they managed to satisfy all concerned. A miracle anywhere, let alone LALA land. Hats off to SCRUBBA.

Many repeaters are crossband, where there are significant numbers to support the dual cost of two bands of hardware for the user and repeater. But nearly everyone starts out in ATV with a 70 cm transceiver, and is reluctant to buy more until the fun level increases.

As for the bands getting crowded, where? Not anywhere I've traveled. In fact although the number of repeaters requested is increasing, the number of users of each repeater is decreasing. In other words, the FM'ers are simply making more and more private repeaters instead of concentrating activity to existing repeaters that are usually empty 90% or more of the day. In Chicago, I don't care when you tune the band, (70 cm) you are not likely to ear any 440 QSO, and during morning/evening drive time, you might find 2 or 3 repeater is use, on rare occasion 4-5. For this they need 30 MHz of spectrum?
Henry Ruh...KB9FO

There is one link here in Michigan that trashes our ATV repeater audio from a group called USECA. Their link is veritical, our 439.25 LSB ATV antenna is horizontal. I'm in the A-Line, not much room to move my input freq. The person who represents USECA has refused to move their link freq. I have offered to purchase the crystal, pay for his gas, and even go with him to help but nothing. I e-mailed, wrote, and phoned our coordinator who KNEW about the link before he ok'ed our freqs. I never got a response. What ever happened to the gentlemen thing? I have the feature to turn off the input audio and pass the 440 FM control audio but it sure would be nice to have no interference.
Chris...N8UDK chris@murphysoftware.com murphy@mail.msen.com

All I would ask is that coordination councils obey the FCC Rules. The FCC tells us that a "Frequency Coordinator" is:
An entity, recognized in a local or regional area by amateur operators whose stations are eligible to be auxiliary or repeater stations, that recommends transmit/receive channels and associated operating and technical parameters for such stations in order to avoid or minimize potential interference. (47 CFR § 97.3[a][21]).

The FCC Rules also lay out all the details about where the ham bands begin and end in the spectrum, and what kind of transmissions are
allowed on each band. They also provide for "simplex," "repeater" and "auxiliary" stations, on these bands. (47 CFR § 97.305.) Many transmission modes are not compatible with one another. Also, some of them take up more (or less) bandwidth than the others. Yet each of them is a "given" in the equation. A "coordinator" must do those things in the FCC definition. Or by that definition, the person is not a
"coordinator." Yet somehow we seem to have auxiliaries that are purported to be "coordinated" on top of ATV repeaters.

Everything a frequency "coordinator" does is based on two FCC rules. (See the definition of a "coordinator," above.) One concerns coordination of "repeaters" (47 CFR 97.205[c]). The other concerns coordination of "auxiliary stations" (47 CFR 97.201[c]).
These rules address what takes place when one repeater or auxiliary station is coordinated, and a conflicting system of the same type of operation is not. (Where that is the case, the non-coordinated station has a primary responsibility to cure the interference.) These are the
only FCC Rules that establish any status, or function, of a "coordinator." The rules do not provide any "primary responsibility" to cure interference where a repeater interferes with an auxiliary station, or an auxiliary station interferes with a repeater. The only situations where this "primary responsibility" to cure interference exists is when one repeater interferes with another repeater, or where one auxiliary interferes with another auxiliary. Period. Because it would be impossible for a "coordinator" to issue a "coordination" where

a repeater and an auxiliary would interfere, and act within the FCC's definition of a "coordinator," the Rules do not provide for any primary
responsibility to cure any resulting interference. (It seems it would have been a self-contradiction for the FCC to write or propose such a
rule.) The FCC presumes, with all this, that "coordinators" use FCC compatible band plans.

Ed sez:
Henry, While ATV is usually the one to be interfered with it is not always the case. It does not take much energy to key up a COS repeater with a video carrier. ATV needs to be in a slot by itself.
Correct. An FCC compatible band plan.

I have been holding off on making comments because I thought that most of the folks involved really understood the big picture, but it looks like they either don't, or else they just refuse to recognize it. Maybe this is because some coordination councils are subject to political take-overs by one special interest group or another.
Now I'll say my piece:
1. The bands are getting crowded and all of you know we must share.
2. Most of you know how much bandwidth we do (or have the potential to) occupy in different parts of the USA.
3. If you have done the homework you should be doing as Repeater Owners, you also probably know how much your local coordinator does or does not have about these links and packet, etc. In many areas, he DOESN'T know about a lot of them, because many REPEATER COORDINATORS do not coordinate links.
Usually the same organization that coordinates repeaters also coordinates auxiliaries. See 97.201(c).

About the best thing they know is the portion of the band that has been allocated for such uses. As ATV users (and repeater owners) we will not get very far making hostile statements, threats, and unreasonable demands. We gotta change! As long as frequency coordinators and other users see behavior of this type, it will perpetuate the very problems that you are having now.
See the position paper titled "Frequency Coordination, Band Plans and Challenges to the Rights of Amateurs" on my web page at: http://www.why.net/home/tom.blackwell/

Work with folks who coordinate repeaters, try to find out who the links are. If something's interfering (I mean really interfering- not that they're just in the passband), explain the problem, educate them if required, and offer to help them move if needed. Don't antagonize folks.
That's a little hard to do when the interfering signal is unidentified (and maybe where that signal also constitutes a "one-way" transmission).

Certainly you know that unless they're real close, passband signals don't really do all that much unless close to Color or Sound frequencies.
KC5NQ presented the Texas VHF-FM Society with an analysis of this a couple of years ago. But what was ever done?

Try to get the link users to use opposite polarity from you when there is a problem. Or take the leap and go CROSS BAND. You'll see most of your problems go away. Your users will be able to go duplex without duplexers. You can put the $$$ you spend on filters for the users (you DO use VSB filters on all 400 transmitters, don't you?) into nice enhancements for your repeater system and for toys for the shack.
HATS already knows the benefits!

We here in Atlanta have known the benefits for a long time. We have 4 ATV repeaters all within 80-100 miles of one another. They all output in the 420-430 part of the band. All but one are either on 1000 ft Mountains or a 50 story building. They are all crossband. Two of them are Co-Sited with very active 433 MHz 56k and 1.2k packet backbones and numerous UHF repeaters and link receiver/transmitters. We have major satellite users here, including one who calls a 7 state SSB simplex weak signal net on UHF. There are NO PROBLEMS. Everyone gets along.
I am glad to hear that you have worked this out in your state.

The few problems that there were got solved by cooperation and using separate sound transmitters or by rebuilding the nasty Mirage ATV repeater amp. One repeater had a custom amp built out of 3 linear bricks. Less than 400 bucks, linear, clean, and twice the power of the nasty Mirage. Yes, my sig will show I work with SERA. I was ASKED by them to help advise on things that they were not too familiar with (like ATV). When I don't know the answers, I ask others such as Kip Turner, Tom O'Hara, and even

Henry. We have worked through several problems and resolved all of the issues I know of. There is no hostility that I am aware of between any ATV repeater owners or users and any other interests anywhere in our 8 state area!
In Texas, there was a move to "decoordinate" the Houston ATV repeater on 421.250 in 1993. It was as if W5PZP was just supposed to go home and shut it off. It continues to operate, of course. In Dallas, the KC5NQ ATV repeater on 421.250 has remained "coordinated" but has suffered from conflicts with narrow band (even high power, unidentified, one-way transmission narrow band) off and on for a period of time. Also in Texas, not all the members of the Texas VHF-FM Society recognize some of the individuals who call themselves "coordinators." I had to make that kind of announcement in August, 1993. (There is even someone going around calling himself the "packet coordinator," even though is no such thing in the FCC Rules as a "coordination" of simplex packet.)

Sometimes it is hard to keep the peace. Accusatory magazine articles and one sided statements that no longer hold water are not helping.
Give a little, change your attitude, and cooperate- don't instigate!
I've observed some 'attitudes' on both sides.... But all I want is for the FCC Rules, (such as 47 CFR § 97.3[a][21]) to be followed. It is not unreasonable to require that coordinators use FCC compatible band plans.

73 all- I have my flame-proof underwear on, so turn up your burners and fire away.
Ralph Fowler, N4NEQ SERA Amateur TV Technical Advisor Atlanta, GA USA
I understand he has been elected again as a Director of Texas VHF-FM. There was a time when I would vote for him and encourage others to do so. That was several years ago. We members of Texas VHF-FM have been at a loss since August, '96, because the Board has not published a newsletter that even gives us the list of the officers and board members that were elected at that time. (With this, I have not received anything that provides the name and address of the President, for example.) I hear that when this board tried to hold a meeting in January or February, they did not even have a quorum, and were unable to conduct any business. I also hear that 8 of the 9 board members are involved in one other closed, private, repeater club together. There may be some important matters before the Society, of which the members should be informed -- such as money demands upon the Treasury from those from other states who are trying to organize coordinators. It seems things have changed since I served on the board. I am a Life Member of the Society.
TOM BLACKWELL... N5GAR ARRL SGL-North Texas Sysop tom.blackwell@why.net http://www.why.net/home/tom.blackwell/

REPEATER ANTENNA POLARIZATION...horizontal or vertical? some opinions.

Where are the experts. Here in Seattle we want to upgrade our repeater site. We do need a new antenna. Which is the best way to go? Horizontal or vertical? We are now horizontal. However we have to be able to receive signals from all directions. Antenna now in use has several nulls. Horizontal or Vertical??? What would be a good antenna to purchase?? Would rather not spend a small fortune. Club is not all that rich. Most of the ATVers here use a beam to get to the repeater site. In a survey of the gang, they would be willing to switch to vertical. In fact what is the main reason for horizontal???
Richard ...radio@techie.com

You might want to consider the fact that it is a lot easier to run ATV mobile (there are a few that do that) using vertical polarity on the repeater input and output.
Dave Bourne...WB8TMP

Here in Portland Oregon we use Vertical Polarization for everything. It is the only way to get an antenna with some gain. We use Comet type CoLinear antennas. Would love to talk to you guys up in Seattle about linking to Portland.
Ed Mellnik...WB2QHS

I would recommend Horizontal polarization for several reasons. First of all you did not indicate what frequency band you are using. I would guess 70 cm. If that is the case I would recommend a Rib-Cage Slot. We are using these antennas for receive and transmit for about 5 years now. Philadelphia, Pa has ben using theirs for about 10 years. I have sold them to stations in Pa,Mi,Arkansas to name a few. The Rib-cage slot is a modified Alford slot which was developed by Gerald Comer for ATV use. Herd Electronics in Dillsburg was manufacturing them but is too busy with other projects now. However I have started to build them and now also have them available in kit form. Every one using them are very happy with the results. For all practical purposes they are omni with about 6 db gain. Why use horizontal, to reduce the interference from the encroachment of the vertical Fm signals. It helps a lot to be cross polarized. I get 189.95 plus shipping for an assembled antenna or 119.95 for the kit form. All hardware is Stainless steel an construction is Aluminum. RG213 pig tail with a male N connector as standard. Our input is 426.25 with output on 439.25 and also an output on 923.25. The 923.25 is vertical but we expect to change that in the future.
John Shaffer...W3SST W3SST@juno.com

Those of us that are members of the Central Atlantic Amateur Television Network (C.A.A.T.N.) all use horizontal. Isolation from all the FM stuff weather amateur or commercial is essential. We use a rib-cage style antenna that seems to work great. You can contact John Shaffer W3SST for info and availability at W3SST@juno.com.
Dave ...KC3AM KC3AM@ix.netcom.com

We used a Comet 1221s for our VERTICAL 1.2 GHz FMTV repeater receiver. We used a Diamond 718L for our 420-430 MHz AM ATV VSB output. The antennas are omni, easy to get, and easy to install. Vertical is easier to use for mobiles and people with existing vertical antennas. The vertical antennas look more like conventional 2-way antennas on a shared tower. We have a lot of mobiles using ATV. All 4 ATV repeaters are crossband and vertical.
We have no link/repeater interference (after we got rid of/modified the junky, nasty, Mirage amps.
Ralph Fowler...N4NEQ rwf@mindspring.com

In Baltimore Maryland (Baltimore Radio Amateur Television Society) --BRATS, we use vertical polarization for all of our ATV work. There are good commercial antennas available for the repeater site (you don't want to be doing this project too often), the popular home antennas (FO-22, j-beam multibeam, and home-made loop yagis all flip to vertical easily on 450. The same goes for our work on 900 and 1200 ATV. Commercial broadcast TV interference is better avoided locally and mobile ATV is much easier.
Neil...WA3ZQI http://www.smart.net/~brats

I agree...vertical is a whale of a lot easier, both on the repeater operators and the general users....if they have a beam...just flip it! Horizontal antennas for 439 MHz., are either non existent, or very high priced....I.E. commercial units! You either have to home brew a slot antenna...or buy one, which tends to be very expensive! You can go out and buy a ringo ranger...or the original ringo for less than $ 100 and you'll be fine....try buying a horizontal antenna designed for ATV....say @ 439.250 MHz., etc., it will have to be custom built, will cost you big bucks....etc.! Believe me.....I've been in 2-way radio for 20 or some odd years....You're better off....just getting an antenna from Cushcraft, homebrew it, or otherwise get one....than buy one from one of the Biggie....antenna places...like Motorola, GE, or RCA...if they're still alive, which I doubt!
Danny P. Clendening dclenden@mail.orion.org

There are good omni horizontal antennas like the skeleton slot (HERD Elect.) or quad wheels (Olde Antenna Lab) available that give about 5-6 dBd. There are 9 dBd omni verticals from many sources (Diamond F718x, DB Products, etc.). Both need to be placed so that there is no metal closer than 2 wave lengths if mounted on the side of a tower, but best placed on top to minimize nulls. This is not always easy when using two antennas for an inband repeater - one at least has to be put on a cross bar. The 3 dB difference is not that much in picture, about 1/2 P unit, or 1.4 times farther with a 9 dBd vertical. Of more consideration is to be cross band from your neighbor mode. Generally 439.25 is horizontal and 434.0 vertical to reduce mutual interference possibilities. A US Army study about 20 years ago concluded that there is no practical advantage to one polarity over another above 300 MHz. However either may in any one given path be better depending on terrain and conditions a few dB. Another "blind" test of a few dozen ATVers when asked to indicate when the change in picture quality improved to the point that they would do something
about it (bigger antenna, power, lower loss coax, etc.) resulted in an average of 5 dB. So I'd suggest staying horizontal if you're on 439.25 but look into a better horizontal omni or its placement if not getting 6 dBd and decent pattern or go vertical if using 434.0.
Tom O'Hara...W6ORG TOMSMB@aol.com

OHIO AREA ATV REPEATER LISTING

This list is compiled from actual repeater sightings in the Columbus, Ohio area. We need to keep up-to-date listings so newer operators know what to look for when the band's open. H&V in freq. list = antenna polarization. Our repeater is obviously the best so I'll list it first.

LOCATION	CALL	INPUT	OUTPUT	BEAM	CALL FREQ	NOTES
Columbus, Ohio	WA8RUT	439.25 H	427.25 H	~	147.45	A signal on any listed input causes
		910.25 V	1250 V			an output on both listed frequencies
		1280 H	~			
Xenia, Ohio	KB8GRJ	434.25 H	421.25 H	240	144.36	*10= tone up for 1 minute
Dayton, Ohio	W8BI	439.25 H	426.25 H	250	147.45	*10=ID, *71= bul board
		1245	1287			
		1249.5	1291.5			
Lima, Ohio	WB8ULC	439.25 H	421.25 H	315		
Ashland, Ky.	WA4GSS	439.25 H	421.25 H	180		
Elizabethtown, Ky.	W4BEJ	439.25 H	421.25 H	210	146.98-	

Bowling Green, Ky.	W4HTB	439.25 H	426.25 H 1280	200
Wheeling, W.Va	KB8QHO	439.25 H	426.25 H	080
Acme, Pa	W3NBN	434 H	421.25 H 910.25 H	
Carnigie, Pa (Pittsburg)	W3KWH		439.25 H	421.25 H 090

NEWS FLASH...check out the Dayton Hamvention parking oportunities

Dayton Hamvention 1997 parking

I rode with Jay, KB8YMQ to the Dayton Hamvention on Friday. We planned to park at the church across the street from the arena, but to our surprise their lot was not available due to a meeting. We opted to park at a very special place just in front of the arena but the curb was no match for Jay's Blazer. We thought that we could never find a better place to park. What a location to make easy return trips to load up new found gear. As I was strolling the flea market and Jay on his second trip to the car with a power supply under each arm, my HT broke squelch with the following transmission: KB8WBK this is KB8YMQ..the truck is gone and so are all the other cars !

After a few minutes Jay was able to locate the impoundment lot at the arena. Jay told them that he would pay the 35 bucks but the car was staying put until we left that night. The tow guys agreed and everybody was happy because this really was the best spot on the grounds, 50 feet from the bus stops.

As we were leaving, we asked them if we returned tomorrow we would just give them another $35 to park there, they would not have to tow us and we would have a great parking spot. They agreed! Guess they were just taken back by our attitudes. Alls well that ends well, every one was a happy camper, especially me. It was **Jay's** 35 bucks !
David ...KB8WBK

HAMFEST CALENDAR

This section is reserved for upcoming hamfests for as far in advance as we know about them. They are limited to Ohio and vicinity easily accessible in one day. Anyone aware of an event incorrectly or not listed here notify me so it can be corrected. I maintain some fliers that comp this list so for additional info Email me at towslee@ee.net. This list will be amended as further information becomes available.

JULY 19 HAMFEST BEACH HAVEN, PA. Charles ad3l 717-864-2571
JULY 19 HAMFEST WELLINGTON, OHIO at the Fairgrounds John kc8aox 216-323-0081
JULY 20 HAMFEST VAN WERT, OHIO at the Fairgrounds us. 127 South Bob wd8lpy 419-238-1877
JULY 20 HAMFEST HOMER CITY, PA. Elmer kb3wg 412-463-1314
JULY 26 HAMFEST PECATONICA, ILL Marsha nb9ngn 815-399-9233 wa9ffl@aol.com
JULY 26 HAMFEST NESCOPEK, PA. Richard wc3h 717-387-6759 tattoo@ptd.net
AUG 1,2,3 HAMFEST AUSTIN TX. Joe w5hs 512-345-0800 (big one)
AUG 2 HAMFEST QUINCY, ILL Jim n9jf 217-336-4149
AUG 2 HAMFEST COLUMBUS, OHIO Aladan Temple
AUG 3 HAMFEST RANDOLPH, OHIO Joanne kj30 330-274-8240
AUG 3 HAMFEST APOLLO, PA. Bob n3wav 412-339-9607
AUG 3 HAMFEST NORTH WASHINGTON, PA. Bob n3n0s 412-727-2194
AUG 3 HAMFEST ANGOLA INDIANA
AUG 10 HAMFEST JACKSON, MI Terry k8smc 517-784-2398
AUG 10 HAMFEST PAULDING, OHIO at the Fairgrounds Jerry kb8maf 419-399-4507 jlrhod@bright.net
AUG 16,17 HAMFEST YORK, PA. at the Fairgrounds 8:00am to 4:00 pm 717-764-8193
AUG 17 HAMFEST DANVILLE, ILL. Gary ka9sks 217-759-7389
AUG 17 HAMFEST WOODSTOCK, ILL. Bob n9kxg tcrg@hotmail.com
SEPT 7 HAMFEST FINDLAY OHIO
NOV 15,16 HAMFEST FORT WAYNE, INDIANA
Wilbur...K8AEH

NEW MEMBER SECTION

Let's welcome the following new members to our group**!** If any of you know someone who might be interested, let one of us know so we can flood them with information.

WD4GSM E.R.Hall Wise, Va
WA4DFS Ed Walker Mountain City, Tn
K6GUC Reuben Meeks Kettering, Ohio

TV TOWER FOR SALE!

I was offered the "opportunity" for a free TV tower the other day. Sounds too good to be true right? Well, almost. It seems that an acquaintance of mine wanted the tower removed from behind his gas station ... mine if I take it down. OK! Someone in our club could use it, so I agreed. It took more effort on a very hot day than I would have liked but now it's down and in my garage. Besides the 40 feet of Rohn tower, the effort yielded a DB Products 20 foot commercial "stick" antenna and 60 feet of 1/2" Heliax. (The antenna is stamped 150.625 MHz). If anyone can use 40 feet of good tower, give me a call! It can be had for a donation to the ATCO treasury. Make an offer for it won't occupy my garage too long. The Heliax may find a place at the repeater. The antenna...well, that one is still up for grabs.
Art...WA8RMC

DAVE'S EXPERIENCE WITH RADIO SHACK

Radio Shack 21 inch omnidirectional antenna.
Do not try this one for an ATV antenna. I installed one at work, 4 miles away from the repeater. P1 picture. Not good !
After reading the instructions, it is cut for 470 MHz and above for the UHF side! It gets the regular channels great without the power injector at the amp. but over drives that close to downtown with the power hooked up.
David...KB8WBK

INTERNET INFO

If you have access to the INTERNET, you may be interested to know of some of the HAM related information that is available. We've tried to start a list of interesting places to look in case you get in the "surfing" mood. If any of you find different places to look, I'd appreciate having the info passed on to me so I can include it in this list. The ATCO home page is updated periodically so be sure to check often for late breaking NEWS. Most addresses listed below are case sensitive, so type exactly as shown below.
(If anyone has comments or would like additional listings contact me via Email at towslee@ee.net.

http://psycho.psy.ohio-state.edu/atco	ATCO ATV home page.
http://www.bright.net/~rmeeksjr/atv_day.htm	Ohio, Dayton ATV group
http://fly.hiwaay.net/~bbrown/index.htm	Alabama, Huntsville,Tennessee Valley ATV (Bill Brown WB8ELK)
http://www.netbox.hayden.edu/Guests/AATV	Arizona, Phoenix Amateurs
http://www.citynight.com/atv	California, San Francisco ATV
http://www.ladas.com/ATN	California, **A**mateur **T**elevision **N**etwork in Central / Southern
http://w6yx.stanford.edu/~stevem/atv	California, South Bay ATV Group Stanford University
http://www.qsl.net/wb6izg	California, southern ATV Sights and Sounds
http://www.mindspring.com/~rwf/aatn1.html	Georgia, Atlanta ATV
http://www.smart.net/~brats	Maryland**,** Baltimore Radio Amateur Television Society (BRATS)
http://www.njin.net/~magliaco/atv.html	New Jersey, Brookdale ARC in Lincroft
http://www.intercenter.net/triatv/atv-web.htm	N. Carolina, Raleigh.Triangle ATV club
http://www.navicom.com/~satva/satvainf.htm	Oregon, Silverton, Salem ATV Assoc (SATVA)
http://www.lloydio.com/oatva.html	Oregon, Portland ATV (OATVA)
http://wwwwebczar.com/atv	Oklahoma, Tulsa Amateur TV (TARC)
http://members.aol.com/n3kkm/w3hzu.html	Pennsylvania, York Keystone VHF Club
http://www.geocities.com/Hollywood/5842	Tennessee, East ATV
http://www.stevens.com/HATS/home.html	Texas, Houston ATV
http://uugate.aim.utah.edu/utah_atv/root.html	Utah ATV
http://www.qsl.net/w7twu	Washington, Western Washington Television Society (WWATS)

http://www.ecn.net.au/~sbloxham	Australia, ATV (exhaustive list of other ATV & ham radio sites)
http://ourworld.compuserve.com/homepages/batc	British ATV club (BATC)
http://www.sfn.saskatoon.sk.ca/recreation/hamburg/hamatv.html	Saskatoon, Canada ATV
http://www.gpfn.sk.ca/hobbies/rara/atv3.html	Regina, Canada ATV
http://www.inside.co.uk/scart.htm	UK,Great Britain ATV (SCART)
http://www.cmo.ch/swissatv	Swiss ATV

NOTE: If you are a regular Internet browser, maybe you'd like to be kept up to date on all of the ATV related news bulletins that are generated Nationally. If so, subscribe to the "ATV Internet mailing list" and your Email will receive the bulletins automatically. If you'd like to SEND a message to all other subscribers this can be done also. It's free to all.

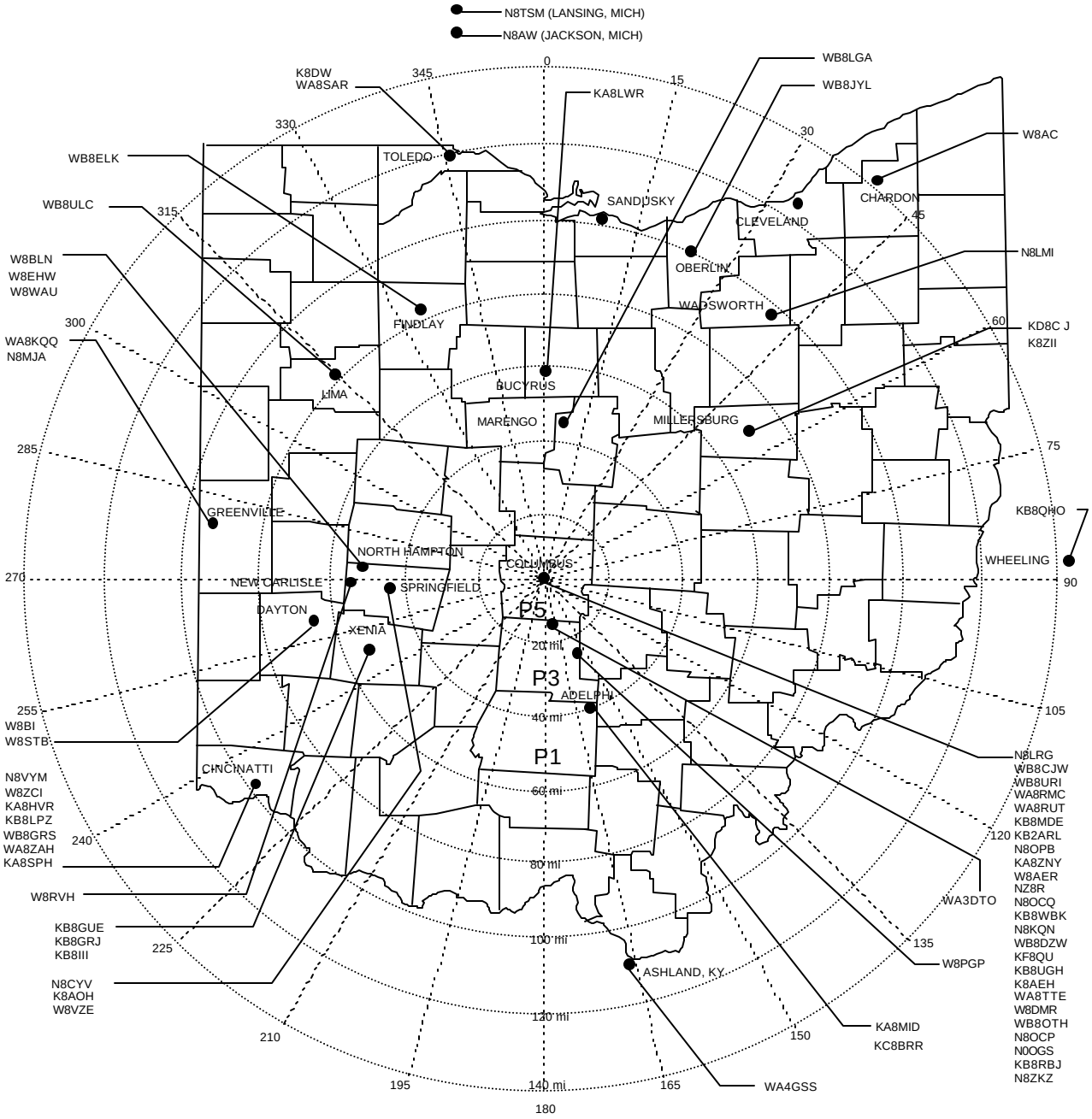
To *subscribe*, send Email message to "listserv@tallahassee.net" and include in the message the line SUBSCRIBE ATV.
To *send a message* address it to "ATV@tallahassee.net".
To be *removed* from list, send Email message to "listserv@tallahassee.net and include in the message "UNSUBSCRIBE ATV".

The following addresses are helpful in searching for many different Ham Radio items on the INTERNET.

http://stevens.com/atvq	ATVQ Magazine home page. ATV equipment & article references.
http://www.hamtv.com	PC Electronics Inc. Lots of proven ATV equipment for sale.
http://downeastmicrowave.com	Down East Microwave Inc. Lots of uhf/microwave parts & modules.
http://www.yahoo.com/Entertainment/television/Amateur_television	Listing of some of the available ATV home pages.
http:/www.acs.ncsu.edu/HamRadio	General ham radio info- satellite track, call sign database etc.
http://www.arrl.org/hamfests.html	Current yearly hamfest directory.
http://amsat.org	AMSAT satellite directory/home page.
http://www.arrl.org	ARRL home page
http://asp1.sbs.ohio-state.edu	Local & global weather map information (good detailed info)
http://www.ualr.edu/doc/hamualr/callsign.html	Search by call sign or name.

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. It also contains mile circles & 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 includes the technical information of our repeater. Each time a new feature is brought on line it's added here. Use this as a quick reference for up/down access codes as well as some of the more important parameters of our system.

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 1250 MHz FM modulation.
interdigital filter in output line of 427.25 & 1250 transmitter
Transmitter Output Power - 40 watts average 80 watts sync tip (427.25)
50 watts continuous (1250)
Link transmitter - 1 watt NFM 2.5 KHz audio (446.350 MHz)

Identification Both 427 &1250 transmitters identify simultaneously every 10 minutes with video showing ATCO and WA8RUT with four different screens. Audio identification is 4 sequences of Morse Code.

Transmit antenna: 427.25 MHz - Dual slot horizontally polarized 7 dBd gain major lobe west
1250 MHz - Diamond vertically polarized 12 dBd gain omni

Receivers: 147.45 MHz for F1 audio input control of touch tones
439.25 MHz for A5 video input with FM subcarrier audio (lower sideband)
910.25 MHz for A5 video link data from remote sites
1280 MHz for F5 video input

Receive antennas: 147.45 MHz - Vert. polar. Hi Gain "Comet" 12 dBd (also for 446 MHz output)
439.25 MHz - Horiz. polar. dual slot 8 dBd gain major lobe west
910.25 MHz - Vert. polar. dB Products 10 dBd gain
1280 MHz - Horiz. polar. single slot 3 dBd gain major lobe west.

Input control:	Major Touch tones:	UP	DOWN
	beacon (5 min)	*439	*22
	regional weather radar	697	#
	**Local radar(5 min)	264	#
	User repeat 1 minute	*45	*22
	Touch tone pad tester	#0	#5
	Manual mode (ID)	*77 90	*22
	(910 input)	*77 91	*22
	(439 input)	*77 92	*22
	(1280 input)	*77 93	*22
	(future)	*77 94	*22
	5 second ID	#9	*22
	Bulletin board	285 pause 92	286
	439 USB remote site input	285 pause 91	286
	Roof Camera	285 pause 95	286
	Reset to scan mode	D37 or #437	

Remote sites:		
	Local radar (inactive at this time)	(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 5 watts)

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 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 CLUB OFFICERS

President:	Art Towslee WA8RMC	Repeater trustees:	Art Towslee WA8RMC
V.President:	Ken Morris WA8RUT		Ken Morris WA8RUT
Treasurer:	Bob Tournoux KF8QU		Dale Elshoff WB8CJW
Secretary:	Rick White WA3DTO	Statutory agent:	Rick White WA3DTO
Corporate trustees:	Same as officers	Newsletter editor:	Art Towslee WA8RMC

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 ○ MONEY ORDER ○
Make check payable to ATCO or Bob Tournoux & mail to:

Bob Tournoux KF8QU
3569 Oarlock CT
Hilliard, Ohio 43026

ATCO TREASURER'S REPORT - de KF8QU

OPENING BALANCE (4/7/97)		$1045.72
RECEIPTS	(dues)	$ 140.00
OTHER INCOME	(bank interest)	$ 5.08
EXPENDITURES		
	Jan Newsletter postage/film	$ (43.21)
	April Newsletter postage/film	$ (41.25)
	Spring Event food	$ (139.61)
	Spring Event prizes	$ (96.00)
	Contribution to Dayton ATV party	$ (100.00)
CLOSING BALANCE	(7/17/97)	$ 770.73

ATCO MEMBERS AS OF 14 JULY 1997

K8AEH	Wilbur Wollerman	1672 Rosehill Road	Reynoldsburg	Ohio	43068	866-1399
KC8AGZ	Dave Lukens	11780 Willowview Ct	Pickerington	Ohio	43147	
K8AOH	Charley Tucker	4546 Laredo Street	Springfield	Ohio	45503	513-390-0693
WB4BBF	Randall Hash	212 Long Street	Bluefield	Va.	24605	
W8BJN	Gene Kirby	13613 US 36	Marysville	Ohio	43040	513-644-0468
KC8BKD	John Miller	4419 Park Ave West	Mansfield	Ohio	44903	
KC8CNV	Jack Compson	5065 Sharon Hill Dr	Columbus	Ohio	43235	
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	419-691-1625
WA4DFS	Ed Walker	PO Box 150	Mountain City	Tn	37683	423-727-9611
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	P.O. Box #32	No. Hampton	Ohio	45349	
WA8EOY	John Schlaechter	3199 Lewis Rd	Columbus	Ohio	43207	491-4470
WD4GSM	E.R. Hall	4955 Pole Bridge Rd	Wise	Va	24293	540-328-9235
K6GUC	Reuben Meeks	428 Lewiston Road	Kettering	Ohio	45429	937-294-0575
KA8HAK	Jim Reese	1106 Tonawanda Ave	Akron	Ohio	44305	
N8KQN	Ted Post	1267 Richter Rd	Columbus	Ohio	43223	276-1820
WA8KQQ	Dale Waymire	225 Riffle Ave	Greenville	Ohio	45331	513-548-2492
K8MBY,N8SIR,KB8UVK	Phil,Jim,Phil jr Buckholdt	153 East Bergey St	Wadsworth	Ohio	44281	
N8LRG	Phillip Humphries	3226 Deerpath Drive	Grove City	Ohio	43123-4100	871-0751
KA8MID	Bill Dean	2630 Green Ridge Rd	Peebles	Ohio	45660	
KB8MDE/N8ZTL	Shaun Miller/Greg MacCartney	5061 County Rd 123	Mt Gilead	Ohio	43338	419-768-2588
K8MZH	Leland Hubbell	7706 Green Mill Road	Johnstown	Ohio	43031	967-8412
WD8OBT,KB8ESR,KA8ZPE	Tom Camm & sons	1634 Dundee Court	Columbus	Ohio	43227	860-9807
N8OCP	John O'Bryant	3139 ElPaso Drive	Columbus	Ohio	43227	274-5410
N8OCQ	Robert Hodge	3689 Hollowcrest	Columbus	Ohio	43223	875-7067
N8OPB	Chris Huhn	146 South Hague Ave	Columbus	Ohio	43204	
W6ORG	Tom O'Hara & family	2522 Paxson Lane	Arcadia	Cal	91007-8537	818-447-4565
WB8OTH	Perry Yantis	1850 Lisle Ave	Obetz	Ohio	43207	491-1498
WA2PCH	Craig Stoll	PO box 1117	Orchard Park	N.Y.	14127-8117	
KE8PN	James Easley	1507 Michigan Ave	Columbus	Ohio	43201	
W8PGP,WD8BGG	Richard, Roger Burggraf	5701 Winchester So. Rd	Stoutsville	Ohio	43154	614-474-3884
KF8QU	Bob Tournoux	3569 Oarlock Ct	Hilliard	Ohio	43026	876-2127
W8RIK	Joe Hussey	1678 Sandhurst Rd	Columbus	Ohio	43229	895-7601
WA8RMC	Art Towslee	180 Fairdale Ave	Westerville	Ohio	43081	891-9273
WA8RUT,N8KCB	Ken & Chris Morris	3181 Gerbert Rd	Columbus	Ohio	43224	261-8583
W8RVH	Richard Goode	9391 Ballentine Rd	New Carlisle	Ohio	45334	513-964-1185
WD8RXX	John Perone	3477 Africa Road	Galina	Ohio	43021	
WA8SAR	Gary Obee	3691 Chamberlain	Lambertville	Mich	48144	
N8SFC	Larry Campbell	316 Eastcreek Dr	Galloway	Ohio	43119-8914	851-0223
KG8SN	Paul Ernst	67 Richards Road	Columbus	Ohio	43214	267-5758
W8STB	John Hey & family	894 Cherry Blossom Dr	West Carrolton	Ohio	45449	
N8TBU	Ed Latham	8399 Fairbrook Ave	Galloway	Ohio	43119	
KB8TRP	Tom Flanagan	1751 N. Eastfield Dr	Columbus	Ohio	43223	272-5784
WA8TTE	Phil Morrison	154 Llewellyn Ave	Westerville	Ohio	43081	
KB8UGH	Steve Caruso	39 South Garfield Ave	Columbus	Ohio	43205	461-5397
WB8URI	William Heiden	4435 Kaufman Rd	Plain City	Ohio	43064	614-873-4402
KB8UU	Bill Rose	9250 Roberts Road	West Jefferson	Ohio	43162	879-7482
WB8VJD	Rick Morris	203 Merton Street	Holland	Ohio	43528	
W8WAU	Jake Fuller	PO Box 117	No. Hampton	Ohio	45349	
KB8WBK	David Hunter	45 Sheppard Dr	Pataskala	Ohio	43062	927-3883
N8XYJ	Dan Baughman	4269 Hanging Rock Ct	Gahanna	Ohio	43230	

KB8YMN	Mark Griggs	2160 Autumn Place	Columbus	Ohio	43223	272-8266
KB8YMQ	Jay Caldwell	4740 Timmons Dr	Plain City	Ohio	43064	
KA8ZNY,N8OOY	Tom & Cheryl Taft	386 Cherry Street	Groveport	Ohio	43125	836-3519

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

FIRST CLASS MAIL

I'VE NOTICED THAT A FEW PEOPLE HAVEN'T RENEWED THEIR MEMBERSHIP!

PLEASE SUPPORT THE CLUB AND HELP US GIVE OUT GOOD FALL EVENT PRIZES!