



YAVAPAI SIGNAL



The Yavapai Amateur Radio Club • Prescott, Arizona • DM-34 • Volume 27 - No.3 • March 2012

Get on HF for Free!

By Bud Semon, N7CW

I have several working HF radios that need new temporary homes. They have been made available through the generosity of Roger, W7EBJ, Neil, K7SEN and ARES/RACES. All of them are older models, without the bells and whistles that modern radios have. Some actually have tubes. These radios have been sitting on shelves or in cabinets for a while, so they are lonely and need to be exercised. I would like to loan them to people who don't currently have the resources to buy an HF radio or who would like to try HF operation. Several YARC members have volunteered to help with installation and set up of the radios, antennas, accessories or whatever else is necessary for someone to get on the air. The only condition is that they be used - you must promise to get on the air regularly! These radios have been trained to come home if they aren't given proper stimulation! So, to be clear:

- 1) They are not for sale.
- 2) They are not to be used as back up radios for HF radios you already have.
- 3) There is no requirement to join ARES/RACES.
- 4) There is no requirement to use them for DXing, contesting, ragchewing or any other specific HF operating.
- 5) This is a loan. If, after using the radio, you decide you love HF, at some time in the future (maybe years from now), when you buy your own HF radio, you must return the radio or loan it to someone else (with my permission and under the same conditions). If you decide you hate HF, you can return the radio to me, with no re-stocking fee.

If you're interested in trying HF, call Bud, N7CW, at 928-771-8267 or send an email to n7cw@cablone.net.



Club members assemble tape measure yagi antennas from kits prepared by Pete, K6VVR and assistant Jim, WB7UZV, at February's YARC meeting at Granite Mt. Middle School.

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March Program

Simplex Operations and Equipment

Fred Zimmermann, N7PJM will discuss operating procedures and equipment using simplex, primarily on VHF. He will cover home and field use, including emergency operation. ■

Welcome to the Yavapai Amateur Radio Club

The Yavapai Amateur Radio Club (YARC) is an ARRL affiliated Special Service Club. The club participates in many activities in the tri-city area by providing communications for local events, emergency communications, and promotion of the hobby throughout the community.

Membership in the YARC is open to any interested amateur or non-amateur alike. Dues are \$20.00/year (Full-time students \$15). The YARC meets at 7:00 p.m. local time on the first Thursday of every month in the Technology Room 404, at the Granite Mountain Middle School, 1800 Williamson Valley Road in Prescott. It is about ½ mile north of Iron Springs road, and all amateurs and non-amateurs as well are invited. Programs of interest are included as part of the meeting.

The weekly Net is held every Wednesday at 7:00 p.m. local time on 146.880- repeater. All amateurs are invited to participate, and visitors are always welcome.

The Yavapai County ARES/RACES Net is held on Monday nights approximately at 7:00 p.m. local time on the 145.290- repeater on Mingus Mountain. A PL of 127.3 is required.

Club Repeater

The YARC 146.880- repeater is located on the hill above Willow Creek road and requires a PL of 100.0 Hz. Our deepest gratitude to Bill Kafka, W2YAV for allowing us to acquire the original club repeater.

Minutes of February 2, 2012 Board Meeting



In attendance:
AD7YR, KE7NAP,
W7NE, K6VVR,
K7SEN, KV8TD,
W7BNW, KE7KEV

Meeting called to order at approx 1810 by AD7YR who said the transfer of ownership for the repeater is in progress....ARCA Reps W7BNW and KE7NAP are now legally in place.

Field day was discussed extensively as far as getting a committee put together, possible locations, encouraging participation, etc.

Methods of expressing appreciation to volunteers was discussed next, as well as mention of a lifetime membership.

Ideas for speakers at future meetings were brought forth. The March one will be done by N7PJN, who will be explaining the wonders of Simplex to us. The ARRL Arizona rep will also be asked to speak to us at some time in the near future, depending on his schedule. Other potential speakers would be arranged around his time frame.

K6VVR told the Board that getting polo shirts with a pocket for the Club in the desired color is proving to be a challenge on the part of the manufacturers. Discussion ensued regarding different colors and the upshot is that our supplier is still endeavoring to find a manufacturer who will provide an appropriate yellow or goldenrod color. K6VVR will simply explain this dilemma in the general meeting.

A letter of resignation as an ARCA Alternate Representative was received from AB7NK.

Corrections or amendments to the January minutes include:

The *Christmas Party*, held in January, should have been referred to as the *Centennial Party*.

Silent Key, N7HYH, was never a founding member of YARC.

ARCA delegates are now W7BNW and KE7NAP.

A *YARC Ham Fest committee* is NOT official at this point. It is being explored.

The meeting was adjourned by AD7YR at approximately 1900.

Respectively submitted by
Barbara Ashley KE7KEV

Minutes of February 2, 2012 General Meeting

AD7YR opened the meeting at 1912 with the Pledge of Allegiance. He then made a motion, which was seconded by KE7DTR, that in the interest of time to allow for the antenna assembly program following the meeting, the normal introductions would be curtailed in favor of simply having all new members and guests stand as a group for a hearty welcome round of applause. New members were voted in. 63 members were in attendance.

AD7YR made a motion for approval of the Minutes of the last meeting and the Treasurer's report as published in the Newsletter and it was seconded by K7CBK.

AD7YR then announced that the call sign of the late Barry Goldwater, K7UGA, would be used during the upcoming Centennial activities. On the 14th, only three local stations will be allowed to use that call sign. Sign up sheets were available for those in-

terested in getting on the air and N7CW will be one of the local Hams providing this service.

Patches and stickers are available to show support for the club. K6VVR explained that there is a challenge getting the desired goldenrod or yellow color from manufacturers for polo shirts for the Club.

AD7YR explained the 50/50 process which would be held later immediately after the meeting.

The next report was from the ARES/RACES given by KD7VVG and details of her report will be given in the Newsletter. Preliminary volunteer sign up sheets for upcoming activities were available at the meeting and online.

Next AD7YR lauded K6UWV for his generous refreshments which are always provided. It was asked that soda pop cans NOT be crushed and that the pull tabs be saved for KI6AHH, who told us that for each 100 tabs collected, one hour of free chemo-therapy will be provided to a cancer patient.

K7SEN reported that the next testing for all classes is this next Saturday, 4 February, in the Jeep Posse Building.

KB7TRE then reported that the students participated in a Fox Hunt at the school put on by K6VVR and WB7UZV. The students also will be participating in the next testing as well in the Centennial activity for radio air time in Sharlot Hall Museum all day on 14 February. K7TRE asked the club for funds to provide refreshments for the group at the Museum. A motion to provide such was made by AD7YR and seconded by WB6ODR.

K7SEN reported that the YARC Wednesday night net is going fine and a sign up sheet for being Net Control was circulated.

Because of Super Bowl Sunday, the **Fox Hunt** normally held on the Sunday following the YARC meeting, will be delayed a week. K6VVR invited any and all interested to join them.

KB7TRE reported that the Food Bank is very grateful for our donations which are needed year round. This month approximately 21 pounds were donated. As a matter of interest, approximately 150-200 families receive food from the Yavapai County Food Bank in Prescott Valley EACH DAY, TUESDAY THROUGH FRIDAY, thus making our contributions all the more appreciated!

ARCA repeater representatives are now W7BNW and

KE7NAP. Trusteeship of the repeater is undergoing change and will be announced later. AD7YR expressed gratitude for the service rendered by the outgoing representatives and for those who have accepted the current responsibilities.

The YARC program for March was announced by N7PJM and will be on **Simplex**, batteries and antennas and their use during emergencies.

W7JLC announced that the Arizona Near Space Research Team will launch an instrumented weather balloon from the Yuma Ham Fest camping area at 9:00 on Saturday, 18 February.

A report was given by KE7KEV on the good medical progress being made by KF7ANX after his triple bypass.

KB7TRE presented a lifetime membership plaque award to N7PJM amidst a lot of congratulatory applause!

Birthday greetings were sung to KE7NAP!

KV8TD announced that the temporary Field Day coordinator is KE7NAP who would like help from the membership. He elaborated about what Field Day is and why we get involved in it for contesting and giving new Hams an opportunity to get more familiar with the equipment and being on the air. Field Day is the last full weekend in June and goes for 24 hours.

KF7RXW, one of our student members, announced that he is in need of an Eagle Scout Project and asked for suggestions and volunteers to help him.

K6VVR then explained more about the YAGI antenna project he would be helping us make after the break.

Motion to adjourn the meeting was made by AD7YR and seconded by KE7DTR.

The 50/50 of \$52 was won by WB9VGJ.

Respectfully submitted,
Barbara KE7KEV, Secretary

Membership Count:

1st Thurs. in January.....179
Gain/Loss.....+2*
1st Thurs. in February.....181



* Includes fourteen 3-month memberships

YAVAPAI AMATEUR RADIO CLUB
February 2012 Treasurer's Summary - Tom Griswold WN7E

Income

Date	Callsign	Name	Code	Check #	Amt. Paid	G. F. Amt.	Rep.Fund	ARRL
02/03/12	W7BNW	Bryan Whipp	R	7135	\$20.00	\$18.00	\$2.00	
02/03/12	W7TRW	Theresa Whipp	R F	"				
02/03/12	KE7PIX	Ricky Bestwick - 2 yrs.	R	3180	\$40.00	\$36.00	\$4.00	
02/03/12	KD7YEG	David Morrow	R	1315	\$20.00	\$18.00	\$2.00	
02/03/12	KI7JZ	Erika Schiltneck	R	1234	\$20.00	\$18.00	\$2.00	
02/03/12	WB7RFY	Jeff Hanna	R	cash	\$20.00	\$18.00	\$2.00	
02/03/12	W5VJH	John Gross	R	cash	\$20.00	\$18.00	\$2.00	
02/03/12	WN7L	Dave Drown	R	2427	\$20.00	\$18.00	\$2.00	
02/03/12	KF7ANT	Sue Drown	R F	"				
02/03/12	N6MY	Raymond Tyrell	R	3629	\$20.00	\$18.00	\$2.00	
02/03/12	KC8BOB	Bob Thompson	R	1423	\$20.00	\$18.00	\$2.00	
02/03/12	KE7DTS	Starla Thompson	R F	"				
02/03/12	KJ6KMT	Joe Ficara	N	cash	\$20.00	\$18.00	\$2.00	
02/03/12	W7MJD	Michael J. Damiani	N	cash	\$20.00	\$18.00	\$2.00	
02/03/12	WB9VGJ	John Broughton	A	1639	\$39.00	\$2.00		\$37.00
02/03/12	WA6AQK	Kenneth Severance	R	4183	\$40.00	\$36.00	\$4.00	
02/03/12	KD6FDA	Loraine Severance	R F	"				
02/03/12	KD6FCZ	Cheryl Severance	R	"				
02/03/12	WA6AQK	Kenneth Severance	A	4182	\$55.00	\$2.00		\$53.00
02/03/12		Decals & Patches		cash	\$25.00	\$25.00		
02/03/12		50/50 raffle		cash	\$110.00	\$110.00		
02/03/12		Party payments received		checks	\$243.00	\$243.00		
Income Totals					\$752.00	\$634.00	\$28.00	\$90.00

Expenses

01/14/12		St Michaels Hotel	1092			\$718.93		
01/18/12		St Michaels Hotel	1093			\$159.16		
01/18/12		Voided check	1094			\$0.00		
02/02/12	K6UWV	David Passell -Refreshments	1095			\$8.19		
		Ellis Rackoff - YARC party						
02/02/12	KE7NAP	expenses	1096			\$114.60		
02/04/12	KE7KEV	Barbara Ashley - Stamps	1097			\$8.80		
02/02/12	KB7TRE	Terry Pemberton - statehood day	1098			\$70.00		
02/02/12	WB9VGJ	John Broughton - 50/50 winner	cash			\$55.00		
02/04/12		Allegra - newsletter	1099			\$28.22		
Total Expenses						\$1,162.90		
Beginning Balance		\$6,836.19		Jan. repeater balance		1391.39		
Feb. Income		\$634.00		Adjust to bank balance		\$1,479.51		
				Feb. 2011 Repeater Fund		\$28.00		
Sub Total		\$7,470.19		Repeater Fund Bal.		\$1,507.51		
Expenses		\$1,162.90						
General Fund Balance		\$6,307.29		ARRL	Check			
Net Loss/Gain		(\$528.90)		Payments	1100		\$90.00	
				Feb. Income		\$752.00		
				Cash out 50/50		\$55.00		
				Deposit		\$697.00		



By Lloyd, WA6ZZJ

ARES/RACES.....

WILDFIRE EXERCISE...

Friday, April 13, 2012 is now the date for the annual Wild-fire Exercise. Just how much of a role ARES/RACES will play is unknown at this time. More information will be put out as it becomes available.

PUBLIC SERVICE COMMUNICATIONS.....

SEDONA MARATHON...

It's early on a Saturday morning, it is still dark out, the outdoor temperature is in the cool 30's as members from the Yavapai Amateur Radio Club and the Verde Valley Amateur Radio Association are arriving at their assigned locations to provide communications for the running of the Sedona Marathon.

More than 2000 runners are in the different stages of warming up in preparation for the 5K, 10K, 1/2 Marathon and Full Marathon races which will take them through the scenic Coconino National Forest, known for its red rock formations, and onto the streets of Sedona.

This was a first time event for our Public Service Communications and a first with the two Yavapai County Radio Clubs working together on providing the necessary coverage needed. Twenty-five operators from the two clubs were involved in covering fourteen different Aid Stations, Course Management vehicles and Net Control. For some, it was their first time at assisting in communications for an event and then there was also the many 'seasoned veterans' that always seem to be ready to step up and do the job.

From the organizers we received the following thank you: Thank you and all of your operators for the invaluable assistance provided to the event. We could not do it without you all!

I would like to add a big THANK YOU to the operators who braved the darkness and cool (cold?) temperatures to participate. Events like this cannot be covered without the help of each and every one of you...

UPCOMING PUBLIC SERVICE EVENT COMMUNICATIONS.....

MS-150 Ride the Vortex...

The next event and another one in which we will need the cooperation of both clubs is the upcoming two day MS-150 Ride the Vortex Bicycle event. This will be Saturday and Sunday, April 14 - 15, 2012. The event will begin and end at the Verde Valley Fairgrounds in Cottonwood. The route has been selected and I have information as to location of the rest stops so the communications planning can begin. I am still waiting information on the SAG vehicle and Medical communications that will be necessary. I have a meeting with the organizers on Tuesday, January 28th and hope to have more information at that time. As of the last word there were already over 500 riders registered so far.

At this time plans are for the MS people to feed breakfast, lunch and dinner on Saturday with breakfast and an afternoon BBQ on Sunday.

More information and route maps can be found at: <http://tinyurl.com/7h9qwjie>.

Whiskey Off Road Mountain Bike Event...

The next event after that will be the Whiskey Off Road Mountain Bike event in Prescott. This is the second year for this being a three day event. It will take place on Friday, Saturday and Sunday, April 27, 28 and 29, 2012. Last year we used 18 operators on Friday and 25 each day Saturday and Sunday.

For more information see:

<http://www.epicrides.com/index.php?contentCat=6>

Whiskey Row Marathon..

On Saturday, May 5, 2012 will be YARC's long standing participation in the Whiskey Row Marathon on Saturday, in support of the Prescott YMCA. For this event we typically use 18 to 20 operators.

More information at:

<http://www.whiskeyrowmarathon.com/>

Some members have already signed up for some of these events and there will also be signup sheets at the March YARC meeting. SO.... Put these dates on your calendar. It's never too early to start planning your participation.... ■

Ask Elmer

By Neil Vince, K7SEN



If you have a question related to our club activities or a technical question, please send it to:

ask.elmer@w7yrc.org. The answer may be of interest to other members and will be posted in the Newsletter.

F. A. Q.

I am a new member and am wondering how I get my password to access the "members only" page on the YARC website?

This question was covered a few months ago. I'm made a note about how we can better serve the new members in getting this information to them in a timely manner. When in doubt, send an email to info@w7yrc.org and you will receive the username and password information.

My husband and I took the technician class last fall and were told we would receive a free year's membership if we passed our test. Why do I now find out that the free membership is only good for three months?

If you take a class that is sponsored by the Yavapai Amateur Radio Club and then are tested at one of the testing sessions sponsored by the club and pass the exam, you will be granted a three month free membership into the club. If you have already joined the club, three months will be added onto your membership.

I believe the confusion is that the club in the Verde Valley indicates on their website they will give a free non-voting membership to any new ham. ■

Need Cards Checked for ARRL Operating Awards?

Jim Zimmerman, N6KZ can check your QSL cards for DXCC, WAS, VUCC, WAC, etc.

For information contact Jim at: (928) 713-0542.

Jim's QTH is at: 778 Grapevine Lane,
Prescott, AZ 86305.

A Burglar Broke into a House One Night

A burglar broke into a house one night. He shined his torch around, looking for valuables, and when he picked up a CD player to place in his sack, a strange, disembodied voice echoed from the dark saying, "Jesus is watching you."

He nearly jumped out of his skin, clicked his torch out, and froze. When he heard nothing more after a bit, he shook his head, promised himself a holiday after the next big score, then clicked the light on and began searching for more valuables.

Just as he pulled the stereo out so he could disconnect the wires, clear as a bell he heard, "Jesus is watching you."

Freaked out, he shone his light around frantically, looking for the source of the voice. Finally, in the corner of the room, his torch beam came to rest on a parrot.

"Did you say that?" He hissed at the parrot.

"Yep," the parrot confessed, then squawked, "I'm just trying to warn you."

The burglar relaxed. "Warn me, huh? Who in the world are you?"

"Moses," replied the bird.

"Moses?" the burglar laughed. "What kind of people would name a bird Moses?"

The bird replied. "The kind of people that would name a rottweiler Jesus." ■

Need a Hand?

If you need assistance, we want to help you. If you are just starting out in ham radio, or simply have run across something that you could use a hand with... technical assistance or answers to questions about the Yavapai Amateur Radio Club, are available from knowledgeable club members.

Don't Hesitate to Ask for Help!!

CALL:

Neil Vince, K7SEN (928) 775-2158

Jim Ball, WB7UZV (928) 445-2997

Will Taylor, AD7WW (928) 445-1717

Lifetime Membership Award

By Mary Vince, AB7NK

This year's Lifetime Membership Award was long overdue. Many of you know Fred Zimmerman, N7PJN, as the "quiet" gentlemen who normally sits in the back of the room at the meetings. What many may not be aware of is the history Fred has with the club. In January 1991, Fred was amongst one of forty-five individuals at the first organization meeting for the Yavapai Amateur Radio Club. Many issues discussed and put in place at that meeting are the same as those the club abides by today.

Not only was Fred, N7PJN, the club's first treasurer, he also made sure all the proper paperwork had been drawn up for the club to be incorporated as a non profit corporation within Arizona and affiliated with the ARRL.

When it comes time to sign up for public service events, Fred's name is always near the top of the list. From the Whiskey Row Marathon to the Off Road Car Races, Fred is there. On Arizona's Statehood Day you can always find Fred with Terry, KB7TRE, at the Sharlott Hall Museum with the Granite Mountain Middle School ham radio club making contacts and showing their display and knowledge of amateur radio to visitors passing through.

Besides Amateur Radio, Fred's other passion is the Arizona Desert Bighorn Sheep Society. He travels to areas so remote the only way in is by helicopter. He has mentioned he likes to practice ham radio in VERY remote locations and uses Winlink on HF. Many times you can go to www.aprs.fi, put in n7pjn-7 and you will be able to see exactly where he is.

On field day, Fred can be found out in the wilderness somewhere setting up emergency communications while the rest of us are using Field Day as more of a social event and club picnic.

Congratulations Fred, thank you for everything you have done for the club. ■



Terry Pemberton, KB7TRE presenting Award to Fred, N7PJN at the February 2, 2012 Club Meeting.

New Rules for 5 MHz (60 Meters) To Go Into Effect March 5, 2012

The new rules amend the current FCC rules that apply to the Amateur Radio Service of five channels in the 5330.5-5406.4 kHz band (the 60 meter band). The Commission replaces one of the channels with a less encumbered one, increases the maximum authorized power amateur stations may transmit in this band and authorizes amateur stations to transmit three additional emission designators. The Commission also adopts an additional rule that prohibits the use of automatically controlled digital stations and makes editorial revisions to the relevant portions of the Table of Frequency Allocations and our service rules.

The Amateur Radio Service in the United States has a secondary allocation on 60 meters. Only those amateurs who hold General, Advanced or Amateur Extra class licenses may operate on this band. Amateur stations must not cause harmful interference to -- and must accept interference from -- stations authorized by any administration in the fixed service, as well as mobile (except aeronautical mobile) stations authorized by the administrations of other countries. ■



Monthly Foxhunt

By John Broughton, WB9VGJ

The monthly foxhunt was held Feb. 12. Diane, KE7ODP, and Pete, K6VVR, hid the two transmitters. Diane and Pete hid the transmitters at a cul-de-sac overlooking the site of the former Senator Drive-In movie site. There is a model home at the entry to the cul-de-sac and a salesman was interested in what was going on and talked to Pete who filled him in on what we were doing. It is not unusual that folks see us on the hunts and are curious. It gives us a chance to explain about this facet of our great hobby.

There were two teams of two hunters each. Jim, WB7UZV, and Dave, N7GLH, made up a team; Jeff, WB7RFY, and I made up the second team. The weather was cold and blustery, which seems to be the norm lately.

Diane and Pete were semi-devious with the secondary transmitter, hiding it in a clump of grass next to an ever-green tree. It has some of us looking all around and in the tree branches for some time until we found it. Diane thought it humorous that I said I might have to end up stripping the branches until I found the transmitter. Jeff, WB7RFY, actually stepped on it once while looking for it, doing it no harm. He did find it not long after that.

I was very fortunate in that I was the first one to find both transmitters. Now, I have to figure out how to be somewhat devious when I hide the transmitters for the March hunt so Diane and Pete aren't too disappointed.

This was again one of the faster hunts we've had in a while. It didn't take long for the hunters to find the general location. It did take a few of us some time to find the secondary transmitter. We were so certain it was somewhere in the tree that we neglected for some time to look on the ground around the tree. All the while, Diane and Pete were watching us hunt and enjoying the fact that we kept looking and walking around the tree almost and actually stepping on the secondary transmitter before we found it.

We had our usual social get-together at Denny's. Again, the hot coffee hit the spot, and the 99-cent pie-of-the-day special, cookies & cream pie, was very delicious.

We would encourage more folks to get involved in the hidden transmitter hunts. They are really fun and help develop direction-finding skills.

Pictures of the hunt can be seen at:

<http://tinyurl.com/89try6c> ■

General License Class

By Roger Nash, KD5VRW

April 14th and 21st - 8 am to 5 pm
Jeep Posse Building in the Pioneer Park Complex
1200 Commerce Drive, Prescott.

The course textbook is The ARRL General Class License Manual 7th Edition ISBN 978-0-87259-811-9

This class is presented without charge by the Yavapai Amateur Radio Club as a service to the Amateur Radio community.

To register or obtain additional information, please send your request to classes@w7yrc.org

VE TESTING

By Mary Vince, AB7NK

Ham Radio Test Results

Saturday, February 4, 2012, thirteen applicants took 18 test elements which resulted in six Technicians and four Generals.



Congratulations to all on your new or upgrade license.

The next test session will be held on Friday evening, May 4, 2012 at 6:00 p.m. at the Jeep Posse Bldg.

To pre-register email testing@w7yrc.org. Any other general testing questions are covered on the club's webpage at www.w7yrc.org and click on the VE tab. ■

Upcoming Events

- April 13, 2012 - Annual Wildfire Exercise
- April 14-15, 2012 - MS 150 Ride the Vortex Bicycle Event in the Verde Valley.
- April 27,28, & 29, 2012 - Whiskey Off Road Mountain Bike Event.
- May 5, 2012 - Whiskey Row Marathon.

WHAT IS ATV?

By Mike Collis, WA6SVT

*Reprinted courtesy of the Amateur Television Network
(www.atn-tv.org)*

SECTIONS

1. What is ATV
2. Operation
3. Receivers
4. Transmitters
5. Antennas
6. Repeaters

Section 1: What is ATV?

Amateur Television (ATV) is divided into two primary types: SlowScan - a system used on the HF bands occupying the audio bandwidth of an amateur station to transmit a few still pictures per minute to another station usually over long distances and Fast Scan - a system of sending broadcast quality full motion pictures over shorter distances on the UHF and microwave bands.

In this presentation we will examine the Fast Scan version of ATV. Back in the late 1940's hams in many parts of the country helped develop commercial television. The old Amateur 5 meter band was used for this mission. They were very helpful evaluating reception of different system types and many engineers were also hams using their vast technical knowledge for television development. The hams - being hams - decided to build their own stations. In the early days it was home brew or converted war surplus UHF equipment.

By the 1960s home brew and converted UHF two-way radios were used. By the 1970s technology changes were afoot with modulator and downconverter kits and completed boards followed a few years later by a complete ATV station in a box were available from PC Electronics and other manufacturers. By the mid 1970s Metrovision in Washington DC was the group that had built and licensed the first ATV repeater in America. By 1979 WA6SVT had built the first wide coverage repeater in California on top of Mt Wilson. Over the years a group called Amateur TV Network (ATN) was formed to support the repeater, and many more repeaters soon followed. ATN now has six state chapters across the country.

Today it is easier than ever to get on the air with ATV for less than \$700 for all new equipment and less than \$100 for the builder. The oldest and most widely used mode of ATV is AM and a related modulation - Vestigial Sideband (VSB). A cable ready TV set can directly pick up ATV on the 420 MHz band. A downconverter is needed for the higher bands. Your camcorder can be used for your ATV camera. All that

is needed is a transmitter and antenna and you are on the air!

FM ATV is one of the fastest growing modes of ATV. FM ATV uses 4 MHz deviation (the terrestrial commercial TV standard used for studio to transmitter links and ENG) in the 0.9, 1.2, 2.4 GHz and higher bands. A few ATVers use the satellite (TVRO) standard of 11 MHz on the 3.3 GHz and higher microwave bands. FM ATV using converted part 15 TV room to room links - such as the WAVE-COM units - is available from ATV vendors. FM ATV is the preferred mode in Europe on 1.2 and 2.4 GHz bands.

Digital ATV is just starting out by converting analog video to MPEG-2 bit stream with QPSK, 8-VSB, and DVB modes of digital modulation. Most of the research to date is done in Germany by the DATV group using standard definition DTV on 434 MHz using 2 MHz of occupied bandwidth and HDTV on 1.2 GHz using 6 or 7 MHz of bandwidth. In this country ATN has started experiments using the methods above and using internet pipelines to link distant ATV repeaters (see <http://www.atn-tv.org>) and look under ATN on the internet for more details). The HSMM group is experimenting with multimedia formats including ATV using 802.11b and WiFi part 15 equipment occupying 22 MHz in the 2.4 GHz band.

Section 2: Operation

ATV is unique in that it enables a ham to show and tell another ham in real time his shack, latest project, field day, home video of the family's vacation, and other events. ATV for public service allows pictures in real time to be sent to emergency operation centers to report storms and damage assessment.

Most ATVers use a 2 meter calling and coordination frequency to set up ATV contacts. 144.34 MHz is popular in the Midwest and some areas of the East Coast. 146.43 MHz is popular in the west. Most ATV repeaters have a 2 meter receiver on site to mix in the calling channel audio with the TV audio. On the 420 MHz band polarization is usually vertical with areas that use 434 MHz and horizontal in areas that use 439.25 MHz and areas with inband 421.25 MHz out and 439.25 MHz in repeaters. Most cross-band repeaters use vertical polarization on both bands.

Lighting is important for good ATV pictures. More detail is available in "Advancing the ATV Art Workshop" produced by ATN. A camcorder, CCTV camera and most analog output computer cameras work well for ATV. Antennas should be above the tree line for good DX on simplex and operation to far off ATV repeaters. Low loss feedline should be used. A low noise preamp is a good idea if you use a ca-



ble ready TV or an older downconverter. At least 10 watts is needed or good ATV distance and 100 watts or more for long haul DX work. ATVQ magazine (<http://atvquarterly.com/>) is a good resource for information on what is happening in your area on ATV, projects you can build, ATV group information and advertising for the latest ATV gadgets for sale by reputable ATV vendors and manufacturers.

Section 3: Receivers

The simplest ATV receiver for AM or VSB is the standard TV set using a 6 MHz wide channel. A cable ready TV can receive the 420 MHz band ATV signals - just add an antenna (and preamp for even better performance) and you are ready to receive ATV! For a non-cable ready TV add a downconverter and for the higher bands a downconverter is needed for all TV sets.

FM ATV needs a TV with A/V inputs or a video monitor, both requiring a full FM TV receiver. Low cost Part 15 domestic units work well on 2.4 GHz and imported Part 15 type units work well for 1.2 GHz or 2.4 GHz bands. A satellite receiver can work on 0.9 and 1.2 GHz bands for FM TV but are set up for wideband FMTV and need a preamp and filter for better operation. They work well for Wideband ATV with a downconverter on the 3.3 GHz band and above.

Section 4: Transmitters

It used to be said that AM TV on the 420 MHz band was the easiest way to get on ATV and that is still probably true but the Part 15 FM TV units are also simple to use on 2.4 GHz. Most ATVer's use off the shelf transmitters or a transmitter with a built in downconverter. Transmitters use crystal control or PLL to set frequency and AM modulate the carrier directly with video. Audio is modulated on a 4.5 MHz sub-carrier and mixed in at the video modulator. The transmitter is double sideband occupying 9 MHz. The easiest way to build a VSB ATV transmitter is to either add an external RF 6 MHz wide bandpass filter to your existing AM transmitter or use a CATV Modulator.

CATV modulators are rack mountable and are much more sophisticated. They modulate a 45.75 MHz IF with video then filtered through a VSB 5 MHz wide IF filter. The audio is modulated on a 41.25 MHz carrier at 25 KHz deviation. Usually the aural carrier is phase locked to the visual carrier maintaining a precise 4.5 MHz difference. The aural and visual carriers are mixed to the final output frequency and amplified. Most CATV modulators can produce an output to 550 MHz making them suitable for the 420 MHz band. The modulator output is in the 10 to 20 m/w level requiring am-

plification with a class AB RF power module.

The easiest FM ATV transmitter is a Part 15 TV unit on 2.4 GHz. The frequency chip can be changed to put all four channels into the ham band on coordinated ATV frequencies. Amplifiers are available from ATV vendors. Imported Part 15 type TV units for 1.2 GHz band are available from ATV vendors.

Section 5: Antennas

The antenna system and its placement is one of the most important items in designing any ham station. In ATV we need more signal as compared with voice modes due to our larger bandwidth. Base stations should use a directional 13 dBd or better gain antenna to get as much signal as possible and to reduce co-channel QRM and multipath. The polarization is dependent on what is used in your area. Stacking yagis or using larger microwave dish antennas will give better DX on ATV.

The best location for your antenna is above the roof line and trees. Stay away from RG-58, RG-8 and other HF-VHF feedlines. They have too much loss at UHF and even more on microwave. The same goes for the PL-259 connector. Use type N or other quality connectors. LMR-400, 9913 and heliax are preferred feedlines for ATV. Try to keep losses under 3 dB. Waveguide is used for the 5 and 10 GHz bands. DX can reach 50 to 100 miles with good antenna systems and several hundred miles with tropo ducting. KH6HME's ATV transmission from Hawaii was received by ATV stations 2500 miles away in California in full color with tropo ducting.

Section 6: Repeaters

ATV repeaters are fast becoming popular for ATV activity. Today many hams are finding themselves in antenna restricted communities reducing simplex ATV to about 10 miles but an ATV repeater on a high tower or mountain top allows longer distant ATV contacts. Many ATV groups and individuals have built ATV repeaters. ATN has a linked network of interstate repeaters allowing ATV contacts over hundreds of miles.

The two types of repeaters are:

Inband where both the input and output are in the same band (popular in the Midwest since existing ATV simplex stations do not require additional equipment to use the repeater) and Cross band repeaters have the input and output in different bands allowing the sending station to see his own picture, make adjustments to his station and hear distant stations talk

back to him over the repeater via the ATV 2 meter calling channel audio mixed at the repeater. A separate antenna and downconverter or transmitter is needed compared to simplex operation.

The Microwave Experimental Television Society (METS) uses a wideband FM input on 10.4 GHz using Gunplexers to transmit and slightly modified domestic C band satellite receivers to receive their 3.4 GHz wideband FM TV repeater output.

ATV repeaters are located in a high centrally located area and use omnidirectional antennas. The repeater's transmitter is keyed up upon detection of horizontal sync on the repeater receiver. ID is usually done visually by momentary interruption of the received ATV signal by an ID screen or done via video overlay. Some repeaters have two inputs: one is the old 420 MHz channel and the 2nd is a 2.4 GHz FM TV channel.

MPEG-2 -- Motion Picture Engineering Group's broadcast digital video standard

DVB -- European HDTV and DTV standard

QPSK -- Quadrature Phase Shift Keying

8-VSB 8 Level digital Vestigial Sideband, the US HDTV and DTV standard ■

The DIY Magic of Amateur Radio

ARRL's new video, "The DIY Magic of Amateur Radio," looks like a good Public Relations tool, which can be found on <http://www.youtube.com/ARRLHQ>. This eight-minute video is great for anyone not familiar with Ham Radio. The presentation is geared toward the DIY (do it yourself) aspect of our hobby, which is supposed to inspire a new generation of creators, hackers and innovators. The video should be worthwhile for members to better understand and talk about how to use ham radio in creative and fun ways. ■

Like to Submit an Article for the Yavapi Signal?

Share your experiences and/or knowledge with other club members.

Deadline for a submission is the **21st** of the month.

Submit to Joe, AC6AA via snail mail, or via e-mail: newsletter@w7yrc.org

Club contacts - At a Glance

President - AD7YR	president@w7yrc.org
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Bryan Whipp -- W7BNW	
Neil Vince -- K7SEN	
Newsletter Editor: Joe Oliver, AC6AA	

Weekly Breakfasts



Wed. Morning Breakfast:

7:00 a.m. at

Iron Horse Restaurant

(Hwy 89 in Chino Valley)
(N 34°43'56.5" W112°27'15.4")
informal – all are invited

Saturday Breakfast:

at 8:00 a.m.

Masonic Lodge

(1280 Willow Creek Road,
2nd Floor; above Bank of Amer-
ica)
informal – all are invited

* Location data (per WGS84) provided
by Fred Zimmermann, N7PJN

Area Repeaters

Freq.	PL	Location	Owner/ Club	Auto- Patch	Links	Vo IP	Notes:
52.560-	100.0	Mt. Union	N7NGM			IRLP	Node 3301
144.390	Simplex						APRS- www.aprs.fi
145.290-	127.3	Mingus Mtn.	K7YCA				ARES/RACES
145.350-	162.2	Wildflower	W7QHC				Dawn
145.600	Simplex					Echo	Node 266053
146.760-	131.8	Hayden Peak	N7SKO				WECOM INC
146.780-	91.5	Bill Williams Mtn.	K7NAZ			IRLP	BWMRC LITZ, 3178
146.880-	100.0	Prescott Heights	W7YRC				YARC
146.920-	162.2	Mount Ord	W7MDY				ARA
146.980-	162.2	Mt. Elden	W7ARA				ARA
147.000+	162.2	Mingus Mt.	K7MRG				MMRG
147.140+	162.2	Mt. Elden	W7ARA				ARA
147.220+	162.2	Mingus Mtn	W7EI				VVARA LITZ
147.260+	103.5	Mt. Union	K7YCA				ARES/RACES
147.260+	127.3	Mt. Francis	K7YCA				ARES/RACES
147.360+	162.2	Mt. Ord	W7MDY				ARA
224.080-	156.7	Mt. Union	KJ7DX				Desert Intertie
442.150+	100.0	Mingus Mtn	WA7UID				MMRG
448.475-	100	Mt. Elden	W7ARA				ARA
448.875-	100.0	Mt. Elden	W7ARA				ARA
449.250-	192.8	Chino Valley	K7POF				
449.675-	88.50	Prescott Airport	WB7BYV		Linked to P Mtn.		
449.750-	123.0	Bill Williams	K7NAZ		Linked to Win-Sys		
927.0875-	151.4	Mingus Mtn	WB7BYV				
927.3875-	151.4	Prescott	WB7BYV			Echo	ARA



T-Hunt Frequencies:

Primary - 145.100 MHz

Secondary - 146.565 MHz

For more Repeater Information & Listings refer to:

- www.w7ara.org/Web/
- www.azrepeaters.net
- www.azfreqcoord.org/listings.htm

YAVAPAI AMATEUR RADIO CLUB

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PRESCOTT, AZ 86304

Visit us on the web at <http://www.w7yrc.org>

Many thanks to Dick Hughes, W6CCD, our Webmaster

