

K9YA Telegraph

Robert F. Heytow Memorial Radio Club

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The Secret Handshake

The Password is "Ham Radio"

Philip Cala-Lazar, K9PL

Ap art from gatherings where Hams comprise the majority of attendees, how do you identify them from the rest of mankind? There's not normally a whole bunch of telltales, but callsign license plates, overheard conversations and HTs jiggling

from belts are pretty good bets (See: *K9YA Telegraph*, October 2004, pg. 1). Of course all bets are off for HTs jiggling from the multitude of belts in any big box retailer.

Members of most fraternal organizations (See: *K9YA Telegraph*, December 2005, pg. 8) have it easier with identifying regalia like the Elks' (B.P.O.E.) elk tooth and the Freemason's square and compass. And, let us not forget, the legendary secret signs, handshakes and jargon exchanged by kindred souls.

But how to tell Hams from the non-initiated? Well, often their pride rises to the surface and they come right out and tell you

There was the caller from a well-known cable manufacturer to my consulting company's office seeking costs data: "Sure I know your firm, you make coax." "How'd you know that?" "I'm a Ham" "So am I." Then there was the QSL card left in my mailbox from the foreman of the utility company tree trimming team who saw my antennas and left a "calling card."

Got Gas?

At an automotive fleet seminar I was discussing fuel management systems with the fleet manager of the

Navajo Indian Nation. We touched upon the choice of antennas to use for a fuel reporting system (Gas Boy) that used RF to communicate fueling transactions with the fleet office. The magic words, "Yagi" and "line of sight," brought a gleam of recognition and the mutual revelation of membership in one of the world's greatest fraternal organizations.

Southern Hospitality

The state of South Carolina was hosting a motor vehicle management conference at Myrtle Beach. Noting the great coverage and CW identifier heard over the HTs in use at the conference hotel, I asked, "Where's the repeater?" My courteous hosts indulged me with an elevator ride and tour of a portable repeater system situated in an upper floor hotel room. A bit later I was introduced to the then head of the state's emergency communications agency—you guessed it—also a Ham! Later that night as attendees moseyed to the hotel's beachfront veranda to unwind we had a great eyeball QSO as we swapped radio yarns.

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*"I'm a Ham"
"So am I."*

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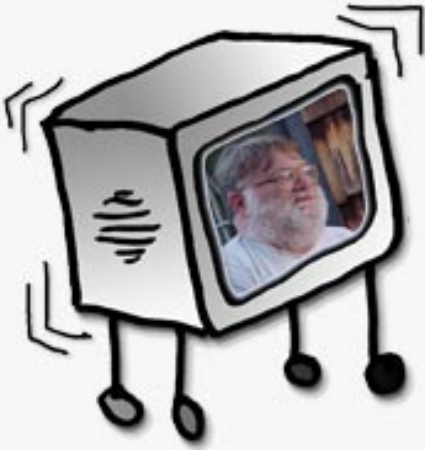
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ATV 101

Hams Should be Seen as Well as Heard



Bil Munsil, K1ATV



Here I offer an overview of the RF component of the old-fashioned TV signal.

Amplitude & Frequency Modulation

There are two basic types of RF modulation: AM and FM. There are others but they will not be dealt with here. FM will be dealt with very briefly in passing.

Difference between AM and FM

AM consists of a constant frequency carrier modulated by mixing audio (as in the standard AM radio band) or video (as in television) or, in a few cases, both. The amplitude of the result varies with the input signal.

This mixing results in three outputs: the carrier itself and two sidebands, upper and lower, which carry identical mirror images of the modulating signal.

For example, assume an AM station on 1,000 KHz. When an audio frequency, say 1,000 Hz, is mixed with the carrier we get the original 1,000 KHz and 1,000 KHz minus 1,000 Hz (999 KHz) and 1,000 KHz plus 1,000 Hz (1,001 KHz). In the case of AM radio, the frequencies can be up to about 5,000 Hz or more.

In the case of television, the modulating signal will be a band of frequencies up to about 4 MHz wide. Therefore, the video signal created could be up to 8 MHz wide; carrier minus 4 MHz and carrier plus 4 MHz. Color and audio can increase this up to 9 MHz wide. More on this later.

FM varies the carrier frequency itself and the amplitude remains the same. The modulating signal can be as high as 100 KHz since an FM radio channel is, at max, 200 KHz wide, as opposed to 10 KHz for AM radio.

Types of Amplitude Modulation

There are several types of AM: double sideband with carrier (commonly known as AM radio); double sideband with reduced or suppressed carrier (rarely used); single sideband with carrier (rarely used); single sideband with reduced, or usually suppressed, carrier (known as SSB); vestigial sideband with carrier (VSB—as used in American TV); and independent sideband with carrier.

I dare say we are all familiar with SSB since almost all Ham HF operation is of this type. The carrier and one sideband are suppressed.

Independent sideband has different information on each sideband, unlike “regular” AM which has, as described above, the same information in mirror image on each sideband.

Television uses VSB. A full 9 MHz wide signal is created, but all of the lower sideband (LSB) except for 1.25 MHz below the carrier is truncated. Thus, all that is left is a vestige, hence the term “vestigial,” of the LSB. Some LSB must be left so the TV receiver can lock on to the carrier. As stated above, the LSB information is a mirror image of the USB information so no information is lost.

“...we are all familiar with SSB...”

Except for the two ATV channels at the band edges, 421.25 MHz and 1241.25 MHz where VSB is mandatory, VSB is not required for HAM TV. VSB filters are expensive.

Audio in TV and HAM TV

Standard American TV has separate video and audio transmitters 4.5 MHz apart with the audio transmitter “above” the video transmitter. HAM TV uses one of two methods for audio transmission: subcarrier audio or on-carrier audio.

On-carrier audio is probably the older of the two methods stemming from the use, early on, of converted UHF commercial two-way radios. The radios were modified to run wideband video and the video

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was AM'ed on to the carrier. The audio was left, basically, unchanged.

As equipment was designed and built specifically for HAM TV a separate 4.5 MHz FM subcarrier was used. The audio is carried on the FM subcarrier and the resultant FM signal is AM'ed on to the video carrier. The TV receiver cannot tell the difference.

Because DSB is used and we don't normally use the VSB filters the ATV signal is a little over 9 MHz wide. As in American TV, the color information is generated in the video source itself, so no external circuitry is required.

Until about ten years ago some new ATV transmitters were still available with on-carrier sound, but it is not used much out west.

Any questions, additions or corrections? Contact me directly at: wmunsil@cox.net

My Shack

In 1965 I saw my first HAM TV magazine, *ATV Experimenter*, published by 73 magazine, starting in 1962, and was amazed to discover the mode designator "A5" (no longer used) referred to live TV. I now have copies of most every HAM TV magazine published since then, including some from England and Germany.

In 1969, or so, I built a TV camera from a kit: I had to bend the deflection coils around the vidicon. I also had a single transistor FM transmitter built into a plastic soap dish, which then plugged into a battery-operated record player.

I was licensed in 1977 as a 5-wpm Technician, KA7AGZ. It was the first 2x3 callsign on the Phoenix repeaters, causing some grief from older Hams who didn't know the FCC had started issuing them. Shortly thereafter, the FCC started issuing "N" calls, so I switched to N7AOU and kept it for about 20 years. A few years back I resurrected my brother's old call from the 1950s, W7WKM. When I found the previous holder of K1ATV had given it up, he is now N8TV; I grabbed it, as it was the last ATV 1x3 available.

I have a Realistic HTX-202; HTX-404; Icom IC-3AT; and Motorola GTX-900 HT for FM voice modes; and matching Midland synthesized radios for 2-meters and 220 MHz.

For HAM TV equipment I have a 1-1/2 watt two-channel 70 cm transmitter and Mirage amp with several tunable down converters and one synthesized one. I gave away a transmitter and D/C set to Ham Radio Explorer post 599 and two D/Cs to an instructor at ITT.

My shack's gear complement includes:

Two 900 MHz AM TV transmitters: one 1-1/2 watt single channel and one 1-watt three-channel unit (with two channels installed.); a Pauldon amp; a Down East Microwave amp for 900 MHz; and two or three tunable down converters.

A 1.2 GHz FMTV synthesized exciter, but not sure where it is at this time.

Several WAVECom units for 2.4 GHz FMTV (transmitters and receivers) and one or two 2.4 GHz baby monitors.

A set of 2.4 GHz synthesized transmit and receive HAM TV boards made in Holland.

A "Barbie-Cam" and "Hot Wheels" cam that are two channel camera/transmitter combos. They operate at 2.4 GHz.

Several 1.2 GHz down converters, two of which mount at the antenna, some tunable and one synthesized. The synthesized unit does not mount

at the antenna.

Antennas, both fixed and portable, for 2-meters, 220, 440, and 900 FM voice and several beam antennas and J-poles for each band.

Mag mounts: a 2-meter 5/8 wave, 220 MHz 5/8 wave, 2-meter/440 dual band used for mobile HAM TV) and a 900 MHz antenna for voice or HAM TV.

A vertical for 2-meters, a J-pole for 220, a J-pole for 440 voice, a 5-element 440 beam used for portable HAM TV use, a 10-element 440 beam for HAM TV, a 900 MHz 10-element beam for voice or HAM



*"Barbie Cam
and Hot
Wheels' cam"*



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The Excalibur Paddle

David Saylor, WK4DS



David, WK4DS, Shown Assembling Paddles

I am David Saylor, WK4DS, of Saylor Machine & Design Works, LLC, in Trenton, Georgia. My main passion in radio is CW and growing, as a close second, is QRP. I have dreamed of making keys ever since I started learning Morse for my General ticket. I made a few homebrew devices and used them all successfully, but I wanted a really nice key for my shack. I tried buying one, but it just was not what I wanted. I researched what

makes a great key truly “world class” and found I wanted many of the same features others required for the best keys.

After several months of study I decided on certain design parameters, these included the following:

- *Spacing between the paddles—I measured the space between my thumb and index finger at the rest position and used that measurement for my paddle.*
- *Height above the table—I noticed my hand lay very close to the table when I was using my paddle, so I placed the paddle “low in the water.”*
- *The action had to be easy to adjust for large-fingered people; I have never had much luck with the little thumbscrews on other paddles, so I redesigned them for better grip.*
- *Pivot points were to be ball bearings because I wanted positive movement with little or no off-axis movement.*
- *The contact ratio distance from the finger pieces to the contacts is very close to 1:1 and this allowed for precise adjustment of contact spacing without much fussiness in the screws.*



- *Forty threads-per-inch adjustment screws are standard and 56 threads-per-inch screws are available for even finer adjustment.*

I created a low voltage drop path through the paddle; it starts with a gold plated connector, then the shielded cable, and on to the paddle where it is soldered to the contact blocks. The contacts are gold plated; oxidized gold (tarnished) is a better conductor than clean copper.

The paddle has to stay in place on the desk even during times of excitement. We tried a number of materials and came up with the one-inch thick piece of brass we craft our Excalibur paddles from.

We polish the paddles, from top to bottom, to a beautiful reflective luster; this is how a high-end paddle should look. All the silver parts you see on our paddles are polished stainless steel; this is an involved process that takes considerable time to achieve.

We use no CNC machinery in our manufacturing process; only conventional machine tool equipment is used in our shop, so you get a personal, hands-on, job on each component. There are 43 parts in the single lever paddle—we make 31 of them ourselves.

All brasspounders will want an Excalibur paddle at their fingertips. You will enjoy the Excalibur so well we offer the same type of warranty Ten Tec offers on their radios. If you don't like your paddle for any reason, return it in the original box, properly packaged (so it will survive the trip), and we will refund your money. The only question we will ask is the one about why you didn't like it. ■

For additional information, visit Saylor Machine & Design, LLC Web site at:

<http://saylorismachine.com/>



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A Brush With Death

Dick Sylvan, W9CBT

The year was 1954, and I was in the U.S. Navy stationed aboard the USS Winston, AKA-94, a lumbering old cargo attack transport. I was an electronics technician (ETR) with a specialty in radar repair. The USS Winston was a WWII- era ship and an outdated dinosaur particularly where electronic equipment was concerned.

Radar Problems

At the time, we were having some trouble with surface/air radar equipment, an old model SG1-B, first introduced in 1942. There was a problem with the plan position indicator screen and the bearing indicator was not tracking with the actual antenna direction. The electronics group was staffed with five ETs at the time and the senior ET said, "Someone has to go up and check the radar antenna to check the relative bearing readings up at the antenna versus what we're reading down in the C.I.C. room where the radar terminal was located. He said, "We have to check the synchro/selsyn motors to see if the readings match." He asked for a "volunteer" to climb up to the crow's nest high up on the ship's main mast and take the readings. No one volunteered, of course, so the senior ET says, "Dick, you're the junior ET aboard, you go!"

Reluctantly, I took my test instruments, tools, and a manual and climbed up the tower, and then up the mast, to the crow's nest where I could stand while I worked on the antenna.

I guess the antenna height's was around 100 feet above the water. Fortunately, the ship was at anchor, but even the gentle rolling of the ship made me feel like I was rolling back and forth quite a distance (back in those days, I didn't get seasick). We had a phone jack by the antenna and I plugged in a self-powered phone. We were going to run bearing reading checks. The guy down at the radar terminal would move the antenna a short distance and we would compare readings. We started doing our checks. This went on for several minutes. During that time, I accidentally dropped a tool I was holding and bent down to pick it up. Just at the moment I bent down, the big antenna started turning—not on my order—I heard the antenna "whoosh" by very close to my head. Had I not dropped the tool, I would have been knocked off the crow's nest and probably fallen to my death.

Divine Intervention

By an act of providence, I was spared. When I saw what happened, I screamed on the phone to shut off the antenna—they cut power immediately. I



Dick, W9CBT, Aboard the USS Winston (1954)

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USS Winston AKA-94



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Bailey's Barn

DX? Sure, But Be Careful Where You Step

Rod Newkirk, VA3ZBB/W9BRD



“Our club did Field Day in Bailey’s pasture once. Just once.” (Uproarious laughter interspersed with groans.) Hams can be a “teasy” bunch, especially among starry-eyed newcomers. I learned this early in my short stint at ARRL headquarters. New England’s old-timers enjoy pulling your leg with straight faces, spinning the wildest wireless yarns you ever heard. I politely pretended to believe

them all. It’s only a hobby, you know.

Their tales of one legendary Bailey particularly intrigued me. Over beer and pretzels in a bistro not far from W1AW, locals were lamenting the demise of Bailey’s barn. Farmer Bailey now had no more need for his venerable Ham shack, a rambling structure that predated spark. The crusty OT was a recent Silent Key. His ancient radio equipment, rusty and dusty, were being dispersed to mourners throughout the valley as prized souvenirs.

At A Distance

Sunday afternoons had seen many an impromptu Hamfest beneath a creaky hayloft. The gatherings began long ago when the racket of rotary spark gaps and rattling motor generators caused Bailey’s family to appreciate Amateur Radio only at a distance. The opinion of nearby livestock isn’t recorded, but occasional rodents underfoot seemed to enjoy the meetings. An adjacent silo anchored the near end of an impressive 160-meter Zepp. Plenty of visiting youngsters were first bitten by the wireless bug in Bailey’s barn.

Eventually my own junk box became the recipient of an oversize low-voltage transformer said to have spent years in Bailey’s station. A brief test proved it still usable despite its grimy patina. I considered it a clumsy nuisance until I needed it for a receiver power supply replacement. It performed admirably. Yet there was something about the little monster that bothered me, and the XYL as well. Maybe it was just its unusually loud buzz.

Memories

A few years later, close friend Hal Bubba, W1JTD, pioneer W1MK-W1AW operator and best man at my 1952 wedding, visited my modest W1VMW Ham shack. It overflowed one corner of our tiny Hartford apartment’s kitchen. After dinner we fired up my homespun 40 watts for a QSO or two. By the time we signed off on 20 CW with a G3, Hal had become strangely quiet.

“...a tantalizing whiff of authentic rural Connecticut.”

Another dollop of’ bourbon failed to snap his silence. Then he began scrutinizing my pile of haywire in minute detail. The W1VMW junk heap always ran warmer than warm, so I cautioned him not to put his face so close to the receiver. Hal finally

concentrated his attention on the aforementioned transformer, sniffing like a hyperventilating bloodhound.

“That’s it: You’ve got a relic from old Bailey’s barn.” Then I caught it, too, a tantalizing whiff of authentic rural Connecticut.

All components of that breadboard rig have long since been discarded or passed on to other tinkers. I like to think that somewhere out in radio land the pungent old transformer still hums. Most probably not. Though its song may have ended, in memory an aromatic melody lingers on, my mental memento of Bailey’s barn. ■



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You Have Questions...

While at a friend's summer cottage for the weekend and attempting to view the weather forecast on a local newscast, we found there was none to be seen. The culprit was a damaged F-type connector, so a hasty trip into town for the local Radio Shack ensued. We arrived at the ubiquitous retailer just as the owner was locking up for the day. "Sorry, we're closed for the day."

As he opened the door to his car I saw (you're getting good at this now) the Ham plates. "Ah, you're a Ham. I'm AA9N." No sooner did the golden words reach him than he strode back to reopen his store and we departed a few minutes later with the needed connector. Now that's what I call customer service and prime Ham Radio spirit.

Hola Primo

Since the advent of the Internet it is the pleasant fate of those doing genealogical research to receive e-mail from "could-be" relatives in faraway places hoping to make a family connection. One such e-mail arrived from a hopeful in Buenos Aires. In the course of our correspondence, the gentleman, a ship's captain, noted my e-mail address contained an Amateur Radio term. I responded, "Of course, I'm a Ham." His not unexpected reply, "Me too." There followed a delightful exchange of e-mails and QSL cards and the likelihood that he is, indeed, a relative.

Since then my genealogical research has uncovered at least three other active Hams in my current family tree—maybe we'll start our own net!

BTW: How many Hams have you met today? ■

Silent Key

George Longden, G3ZQS, founder, FISTS—
The International Morse Preservation Society.
FISTS # 2—25 April 2006

<http://www.fists.org>

Condolences may be sent to George's son:

Paul Longden
34 Glaisdale Close
Bolton BL2 2HW
England

TV, a J-pole for 900 MHz HAM TV, several 1.2 GHz loop yagis for HAM TV, and one or two loop yagis for 2.4 GHz.

For 2.4 GHz there's a "barbecue grill" antenna and a "vagi" (a yagi with two sets of directors.)

With the HAM TV equipment I use a video titler for ID'ing and a WB8ELK Elktronics video ID board (which needs new ID chips).

I use a 13" AC/DC TV/VCR combo and a CASIO pocket TV which will pick up 70 cm HAM TV for close-in demos.

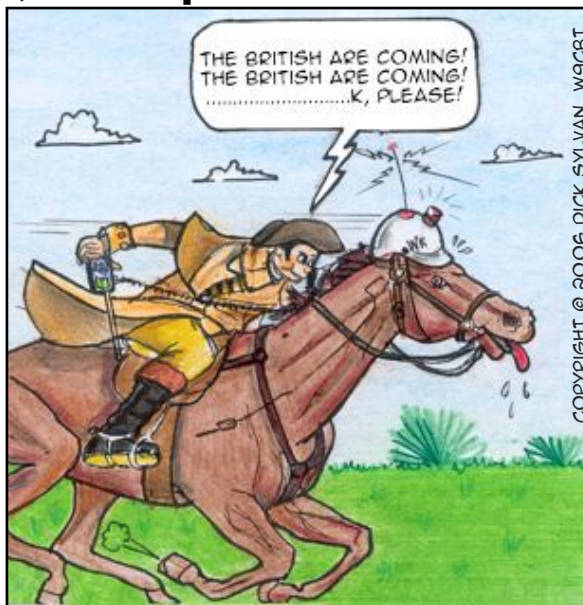
Future plans are to put up a 910.25 MHz AMTV beacon, and eventually, a cross-band repeater. ■

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was furious and asked why they turned the antenna without my order and they said there was some confusion. I immediately grabbed a wrench, leaving everything else up there, and quickly headed down the mast. I stormed into the C.I.C. waving the wrench and was, at that time, ready to whack someone. They apologized profusely.

I said, "Someone else can go up and finish." I was too shaken to go back. The next in seniority ET was "volunteered" to go while I worked the radar below. We straightened out the problem, but it was a scary experience I never forgot. I'm sure that helped me get gray hair prematurely. I guess my number wasn't up yet. ■

Ham Quips DICK SYLVAN, W9CBT



IF PAUL REVERE WAS A HAM

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