

Classic Rigs and Amplitude Modulation: Friendly, Nostalgic Ham Radio Partners

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Ten-year-old Luke, KO4IQ of Alexandria, Virginia, discovered something the other night on 75 meters—people are using AM! Carefully zero-beating the carrier he heard, he pushed the button marked “AM” on his nearly new rig, and was surprised and pleased at what sounded like something special going on.

“I didn’t know anyone used AM!” he said as he and his father leaned closer to the radio, “it sounds really good!” And with that, Luke summed up both the delight and the novelty of a growing number of hams are enjoying in what’s becoming known as “The AM Radio Network.”

In the 1950s, about 30 years before Luke was born, a different generation of hams was primarily using AM on the HF bands. Typical stations in those days were mostly homebrew, especially the transmitters, many of which were patterned with an eye toward replicating the grand sounds of commercial broadcast stations.

Sandy, AC1Y, now near Raleigh, North Carolina, was on the air in those days. He spent recent years feeling somewhat unfulfilled using ordinary, narrow-sounding SSB rigs. But he now says he’s back on AM having the time of his life with a 1940s Collins 32V-1 transmitter and its matching 75A-1 receiver. His return to the airwaves coincidentally was in the same QSO as Luke’s! The younger ham sure found an expert as Sandy explained the attraction.

Vintage radio equipment—used by many modern-day AMers—seems warm compared to today’s downsized microprocessor-controlled rigs. And it’s not just

the thermal distinction that comes with vacuum tubes. It’s also the style of operating and the personal satisfaction that comes with building or maintaining radios from a simpler time.

People on AM tend to “make transmissions,” which can be thought of as extended presentations, that yield a slower-paced and somehow deeper train of thought that many find enjoyable. You can sit and think about what someone is saying, collecting your thoughts in a storytelling manner rather than any rapid-fire back-and-forth exchange.

Audio fidelity is also a factor. People sound human; you can hear the subtle nuances of their voices, and the sounds of the rooms they’re in. Gary, N2INR, often puts his three-year-old son Austin up to the “guest

mike,” and the youngster says Gary’s call letters at the right time. He’s even been heard talking with the seven-year-old twin daughters of Russ, WB3FAU, in what may someday become a DX romance between Erie, Pennsylvania, and Syracuse, New York!

If old-time commercial broadcasting conjures up the image of families gathered around a big radio console listening to programs long gone, then hams continue to enjoy that Golden Age with their own two-way entertainment.

Dave, K3ZRF, and his wife Pam can often be heard Sunday afternoons around one of the AM gathering points (see the sidebar) discussing stories as diverse as their homebrew beer and Dave’s background as a sound man for big-stage rock bands in the 1970s.



Author Paul Courson, WA3VJB, sits at the controls of an AP Radio network console (at work) and at the controls of his shack. Which is which? The ham gear and the red “hot phone” are in his shack...which, as you may have guessed, doubles as an audio production studio!



The “Good Old Days” of AM radio (amateur and commercial) are alive and well—and you’re invited to join in the fun. The price of admission? An AM transmitter, if you please!

Bill, W3DUQ, not far from Dave outside Philadelphia, is trained in sensory perception and how it relates to the tuning in of other worlds. He can be heard on 75 meters leading elaborate QSOs on research and speculation in the field. It seems the use of AM—with its relaxed, inviting pace—encourages and contributes much to the conversations.

You may even have heard a two-way radio talk show on the ham bands that rivaled the energy of any “Oprah” or “Sally Jessy.” One of the authors, Paul, WA3VJB, staged a series of weekend roundtables with his friend Debra Daigle, as they called on their skills as professional radio journalists to coordinate lively debates among hams on various issues.

AM lends itself to such conversations. A certain entertainment factor is obviously translating from what’s found in broadcasting, but it’s far more exciting to take part than be a passive onlooker.

There is also plenty of stuff for the technically minded, especially when it comes to using the vintage gear many AMers use. A typical AM QSO might focus on restoration tips, problem-solving and the sharing of hands-on experience.

“You can get in and horse around with it,” says Craig, VE3NCC, of Sherkston, Ontario. “It’s much more risky to work on the circuits of a \$2000 modern rig,” he adds, “but if you take that 50-year-old AM rig and burn it up or blow it up, who cares?” And he says you’ll have learned something in the process.

Eric, WB2CAU, of Dix Hills, New York, adds to the point by noting that a large percentage of AM operators still home-brew their own equipment. “The simplicity of design of an AM transmitter makes it perfect for the ham who wants to ‘roll his own,’” as Eric puts it.

Many AMers like to mix a little state-of-the-art technology with their vintage pursuits. Synchronous detection—formerly found only in the most expensive shortwave receivers—is one such hotbed of experimentation. Even though synchronous detection has been around for decades, modern circuitry not possible during the tube era enables new, sophisticated ways of achieving a static-free, non-fading signal on the shortwave ham bands.

Amplitude Modulation itself is also taking advantage of advanced circuitry not even dreamed of when high-level plate modulation was the rule. Hams experimenting with Pulse Duration Modulation helped perfect the method for use in modern AM broadcast transmitters—saving commercial stations a bundle! Solid-state, high-power audio circuits have also increased the efficiency of AM by a substantial amount.

AM takes an appropriate place within the amateur service as a specialty mode—one of many facets hams can pursue. It’s not meant to be a primary communications medium, but instead a nostalgic piece of our radio heritage—with a nod toward the technical

Where to Hear AM

AM activity is most common around the following frequencies.

Band	MHz
160 meters:	Upper part of band.
75 meters:	3.885
40 meters:	7.290
20 meters:	14.286
15 meters:	21.390
10 meters:	29.000-29.200

Magazines and Newsletters for Vintage Radio Enthusiasts

Electric Radio
PO Box 57
Hesperus, CO 81326

Published monthly, with good artwork for technical articles and quality photos of classic rigs and vintage stations and a large classified section. \$24/year.

AM Press/Exchange
2116 Old Dover Rd
Woodlawn, TN 37191

Published bimonthly, an editorial forum and debate on the role of vintage radio today. Also a variety of technical contributions on both new and old technology related to AM. \$15/year.

AM International
9 Dean Avenue
Bow, NH 03304

A revival of a group formed in 1967 to preserve AM as a well-regarded part of Amateur Radio heritage. An organizational advocacy group of active AMers.

Ham Equipment Buyers Guide
Barbara Wixon
189 Kenilworth
Glen Ellyn, IL 60137

Volume One tabulates transmitter and receiver data for units made from 1946-72. Pictures, specs, tube complements, production differences. An important identifying tool.

AM Radio Network
Box 73
West Friendship, MD 21794

Informal association of members active in the AM Community. Handles SWL inquiries, coordinates social gatherings, acts as a liaison to commercial media outlets on feature stories.

advantages of SSB for routine and emergency communications.

Many of today’s hams joined the hobby long after SSB’s struggle for acceptance, and some people like Luke—who was born in 1982—know only the solid-state era of technology. Most get a kick out of checking out the world of vacuum tubes, the “big” sound, and the friendly group of hams on AM who are delighted to share the festivities with a newcomer.

AM operation also draws people from outside the hobby. More than a few hams started as shortwave listeners (SWLs) who were introduced to Amateur Radio via AM QSOs. Author Steve, WB3HUZ, notes the typical shortwave radio cannot demodulate SSB. “Although I was unaware of it,” Steve recalls, “I had tuned across the ham bands often as an SWL.

“Unfortunately,” he continued, “all I heard were strange-sounding, indecipherable signals that I would later learn were SSB operators.” He said that “one day I tuned across some AM operators in the 75-meter band, and the rest is history!” Today, with many inexpensive receivers available to the public, AM can continue to play a role in recruiting new hams.

Getting Started

Okay, so how do you get into this little specialty? First, it’s easy to take a modern transceiver, push the “AM” button as Luke did, and listen in. There’s no need for a vintage receiver/transmitter combination right off the bat.

For transmitting, some care will need to be taken with modern rigs to get the right mix of audio and carrier levels. Few of today’s transceivers are capable of producing the level of carrier to match the potential audio used on SSB. Instead, a rule of thumb is to adjust the mike gain to about 30% of what you’d use on sideband, and set carrier to whatever power level the manufacturer suggests—usually about 50% of your rig’s rated PEP output. [The grapevine tells me that the Kenwood TS-930S makes particularly good-sounding AM for a modern “low-level modulation” rig.—Ed.]

Also, to fully enjoy the quality of the audio most AM stations are transmitting, you’ll need the kind of receive bandwidth that makes a typical shortwave station sound good. Narrow SSB filters are unsatisfactory, and will make an AM station sound muffled.

Communications-quality speech processing sounds bad when transmitting AM. Turn it off in favor of a carefully adjusted mike gain. Other AMers are glad to talk you through the initial settings to get your rig sounding good, and then you can mark those positions for the next time you join in. Ideally, you would use a monitor scope for the initial tune-up.

So You Want a Vintage Set of Your Own!

Finding a vintage radio of your own may be the next step. There are swap nets on both

I'm Waxing the Transmitter!

By Paul S. Courson, WA3VJB

Shirt-pocket FM transceivers and HF rigs the size of nightstand clock radios remind us how far we've come from the days when a room full of tube-type gear made up the typical ham station. But it wasn't until a call from my girlfriend, one dreary, wet day, that I realized why I'm still drawn to that old, glowing gear.

I was putting a coat of wax on the massive front panel of a commercial broadcast transmitter that I had picked up this past summer. And when she asked what I was doing, it seemed just as natural to be waxing the transmitter as it would have been to, say, be waxing the car.

This 1946 Collins has the same kind of chrome, metallic paint and high-gloss finish as any automobile of the era, plus large viewing windows for passers-by to watch the light of a quad of old 810 triodes.

But this isn't a car, it's an old transmitter. Pam didn't say much as I told her I was waxing the transmitter, and it then dawned on me that perhaps not everyone understands.

Luckily, she already knows most of the equipment in my station is older than she is, so she easily assumed that this latest activity was connected.

The old car analogy is a good one, actually. My original Novice transmitter, a Collins 32V-2, is still with me some 20 years later. It's like hanging on to my first car.

When my Elmer sold it to me, he said, "This will be a fine CW rig until you get your phone ticket," his idea being that SSB would be in my future—something this transmitter did not produce. But I became absolutely hooked on those glass, glowing things inside, where I could see (or so I thought) the electrons creating a signal for me as I worked my first contacts.

Perhaps my first feeling of "warmth" related to old radios came with sitting down at the rig, my new license posted nearby, having just come in from the winter cold to test if I'd properly trimmed the antenna. I would put my hands on the transmitter cabinet to warm up!

My grandfather used to watch me operate, knowing the rig was old. It usually got him telling a story about the early days of radio, and he'd often ask me, "Did you get California?" on my wireless, since to him that seemed like a huge distance. He was never a ham, but he understood even better than my parents the magic in signals from points far away.

So the memory of our heritage, both family and of radio, is another part of the warmth with this vintage equipment. I think back to my grandfather, and what radio must have been like when he was growing up, and somehow I feel connected when my own storytelling unfolds as I get on the air with others who share an appreciation of "classic" radio.

But the event that really convinced me this 32V-2 would not be cast aside for a new SSB rig as my phone ticket arrived was the discovery of a group of hams on 75-meter AM. There was a certain incentive licensing at play that took me to Advanced instead of just General, since this group was congregating around 3.885 MHz, which at the time was in the segment reserved for the highest grades.

It once meant a trip to an FCC office for an upgrade from

Novice. My grandfather took me in his big 1964 Buick Electra, trying to reassure me that I'd do fine on the exams. He was right, but then there was the dreaded wait until the actual license came in the mail—no instant upgrades!

I spent the weeks with my receiver parked on The Big 85, trying to remember the names and call signs of people I'd soon be working. They were all using older radios, some just like mine!

Oh, sure, I lusted after the then-new Yaesu FT-101 as the most wonderful rig around. And I even hoped someday I'd be able to afford a Collins S-Line. But those thoughts faded quickly as I spent time with my new mode and this old radio.

My storytelling skills improved, even to the point I later majored in journalism in college and ended up with a career as a radio news reporter. Early in my career, I worked at a daytime-only AM station and was also an assistant engineer. It seems the chief put enough faith in my ham radio technical skills to set me off on some routine chores.

It was then that I got an appreciation of big AM transmitters as perhaps the step beyond the 32V-2. But it would be

another decade before I'd realize my dream of a true "Big Rig" in acquiring the transmitter I was waxing the other day. Another daytime AM station had changed hands, and the new owners were preparing to scrap this wonderful rig as part of a station move! I got it just weeks from the scrap yard.

This is the station's original transmitter, and reportedly Art Collins himself, then W9CXX, was one of the site engineers who helped put the station on the air with his broadcast rig, a model 300G-1. It's been replaced these days by a solid-state unit about the size of a kitchen microwave oven. The

station is saving a lot on its electricity bill.

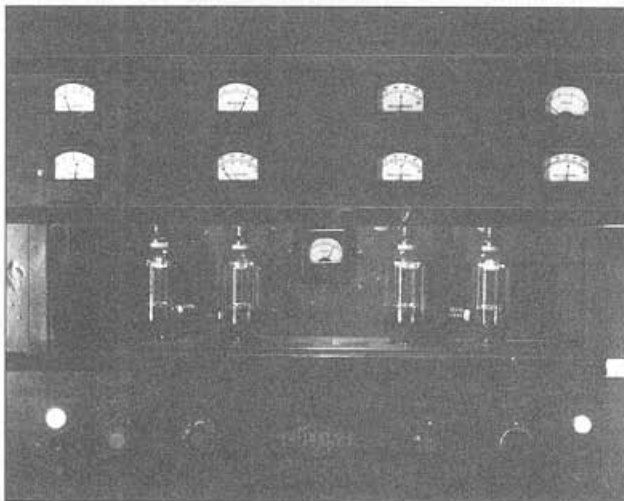
Mr Collins made it easy for me to bring the rig up to 75 meters by using a pi-network output. The retune involved mostly some sequential adjustments in existing variable inductors. To round out my "dream" station, I use a Yaesu FT-101 as the exciter.

Older hams tell me it was a common goal years ago to combine a first-rate amateur station with audio that approached broadcast quality. So I took the idea to the next logical step—given my career—and built myself a replica 1960s broadcast station.

I use a lot of this old but functional equipment for producing audio news tape, which helps justify such an elaborate setup. But when I'm not working on an assignment, it's great fun to use it on the ham bands.

I am fortunate to live near the Chesapeake Bay, which helps my antenna system radiate effectively. Based on letters I get from SWLs around the region, my station is doing its part to recruit new hams. Many listeners say they just happened to pick up our AM conversations while looking for new shortwave stations. They ask how they can join us.

Ultimately, putting together a vintage radio station involves more than just a cash outlay, compared with someone who might simply go out and buy "the best" of today's offerings. There is a very important sense of accomplishment gained from setting up a station that's out of the ordinary. If you've ever waxed a transmitter, you know what I mean.





QST author Joel Thurtell, K8PSV, has a lot of vintage AM gear at his Plymouth, Michigan, QTH—so much, in fact, that his wife recently “suggested” that he move some “AM iron” out of the way so she could park her car in the garage! (photo by 11-year-old Adam Thurtell, courtesy of *Electric Radio magazine*)

East and West coasts catering exclusively to older, AM gear. The “AM Swap Net” serving the Northeast and Mid-Atlantic regions gathers each Thursday evening at 7:30 Eastern Time around 3.885 MHz. It covers as far as the Great Lakes and Florida.

Left Coast hams wanting to join the AM Radio Network with vintage rigs can join the swap sessions held every Wednesday at 9 PM Pacific Time on 3.870 MHz. This net serves California, the Southwest and the Pacific Coast states.

Also, be sure to check out the variety of publications serving the market for older gear (see the sidebar, “Magazines and Newsletters for Vintage Radio Enthusiasts”). Many have classified sections dedicated to such equipment. The *Ham Radio Equipment Buyer's Guide, Vol I* is a gold mine of pictorial, descriptive information on receivers and transmitters made from 1946-72, including specifications and main tube types used.

Classic Rigs You'll Find

An in-depth discussion of which vintage rigs to look for and how to return them to good operating condition could easily fill an article or two on its own [which it will, in upcoming issues.—Ed.]. In the meantime, here are some rigs and options to consider. Among the more popular classic radios found on the bands these days are units made by the E. F. Johnson Company of Waseca, Minnesota. The “Ranger” is often heard, as are the “Viking” and the “Valiant.” These and other E. F. Johnson AM transmitters sell at hamfests for about \$100. Heathkit made some rugged transmitters, too; look for the DX-100, the TX-1 “Apache” and the “Marauder,” among others.

Already mentioned are the Collins transmitters that sat on many tabletops in the 1950s. The 32V series was considered top of the line for audio quality, circuit fortitude, and ease of operating. The latest version, 1953's 32V3, also featured extensive TVI suppression—something that's still important today.

If building something sounds appealing, you could start by modifying an existing transmitter for better audio. Heath's “Scratchy Apache” is a popular candidate for such an upgrade since stock units deserve the nickname! Old *QST* articles and *ARRL Handbook* projects from the era are invaluable reference material.

This facet of the hobby also has its share of premium rigs that still command top dollar. The Collins KW-1 and 30-K, and the Johnson Desk Kilowatt and “500” models are good examples.

There are also some ex-military transmitters that do very well reviving that feeling of Classic Radio. The WWII-vintage BC-610 is common, and typically sells for a couple of hundred dollars. Its younger sister, the T-368, is also popular.

Lately, as AM broadcast stations find it harder to justify the high electricity and

maintenance costs of running older transmitters, some truly “hi-fi” rigs can be had—often for the asking! Long-time community stations are the best source (see the sidebar, “I'm Waxing the Transmitter!”).

Vintage receivers are nearly as hard to recommend as transmitters, since it's so easy to overlook someone's favorite. Hammarlund unquestionably produced some of the best, including the SP-400, the SP-600, the HQ-170 and HQ-180. Others are also found, but these are the most common models. Hallicrafters offered the SX-101, the SX-100 and the SX-110, among others, and National Radio's HRO series still commands top dollar among collectors. Also, look for National's NC-300, NC-303 and NC-183 receivers.

Collins Radio's 75A series was the most definitive from Cedar Rapids, at least among those marketed to the amateur community in the 1950s. The 75A-1 and 75A-2 are less sophisticated than the 75A-3, which, along with the 75A-4, includes the renowned Collins mechanical filtering.

Among military receivers, the R-390 and R-390A provide some of the best audio around. They feature an extended audio frequency response and low distortion, while also sporting mechanical digital read-outs and a variety of filter bandwidths. Also check the R-392, the R-388, the 51J series and the BC-348.

“Real radios glow in the dark,” says Sam, W6HDU, who believes the best examples of a given transmitter or receiver have already been snapped up by members of the AM community. “The good stuff does not show up anymore,” he explains, “and you may have to approach someone on the bands to buy a quality piece.”

But the effort will be worthwhile, as thousands will testify. A vintage radio station will not only foster a sense of history, it also may revive a feeling of excitement in communicating that might be missing for some people. Moreover, the “Golden Age of Wireless” is alive and well—on The AM Radio Network, and you're invited to join in the fun! See you in the “AM Window!”



As you can see, Jim Hanlon, W8KGI, of Sandia Park, New Mexico, takes AM operation and vintage radio seriously! (photo courtesy of *Electric Radio magazine*)

Paul Courson passed his Novice test in December 1971. He was a two-term president of the University of Maryland Amateur Radio Association (W3EAX) and for a time worked at the ARRL's Washington office organizing media coverage of an early SAREX flight on the space shuttle Challenger. His career as a broadcast journalist has taken him to the Associated Press, where for the past six years he's been an anchor and reporter for AP Network News, heard on hundreds of stations (AM and FM) nationwide.

Steve Ickes was first involved with vintage radio when he was 12 years old; his hobby was broadcast and shortwave listening, and he used a 1930s cathedral-style receiver.

Licensed in 1977 at age 14, he's been restoring and operating vintage gear ever since. Steve works as an engineering specialist at the US Department of Defense and is pursuing an electrical engineering degree at Capitol College in Laurel, Maryland.