

DAVID A. ROTENBERRY
K4DR

My interest in amateur radio began due to searching the short wave bands in the 60's. Like many folks who were interested in radio, I initially gravitated to listening to the world via tube type short wave receivers, and eventually was able to build a few, such as the Knight kit Span Master (a rather poor performing regenerative receiver), and Star Roamer (a tube superhet receiver). At some point in between listening to the BBC, Radio Canada, Radio Moscow, etc. I ran across some AM amateur radio stations, and thought that was pretty interesting. One such station was operated by W8YLN in Ohio, and he maintained a regular schedule where he would rag chew with another ham. He developed quite a following of short wave listeners, some of which would write letters to him, which he would sometimes read on the air. This was pretty heady stuff back then.

My first actual exposure to amateur radio operation came by attending a Boy Scout campout which included a tent set up with a Collins S-Line receiver and transmitter. The equipment was owned and operated by Bob May WA4DBG (now K4SE). This was actually similar to a field day operation, and was something that I decided that I needed to be a part of. Ralph Young (now N4TG) was also in attendance, and we both concluded that we needed to investigate what was required to obtain an amateur radio license. Sometime in 1970 we discovered that the Kingsport/Bays Mountain Amateur radio club was offering a class that, when completed, would allow you to take the Novice class license test. Ralph and I, along with many others, sat through weekly classes that were held in the basement of the Kingsport Civic Auditorium. These classes covered basic electronic theory and FCC regulations, as well as Morse Code, which was then a requirement. The novice license was basically a learner's permit, and was valid for 2 years and could not be renewed. In those days, the term "Volunteer Examiner" did not exist, but that was essentially what the many instructors were since they administered the test at the conclusion of the class work.

After learning from the test proctors that I had passed the code and 25 question written multiple choice test, the wait began to find out what my newly acquired call sign would be. It usually took several weeks for the FCC to process and mail the license. It was not unusual for many of us to discover what our call sign was before the official FCC document arrived in the mail due to the advertising sent by the "Little Print Shop" in Texas. They had access to the FCC database, and would mail samples of their QSL cards they were offering for sale. The packet they mailed would of course have your name and address, and as an added bonus, your newly issued call sign after your name. You were not supposed to operate until you had your official FCC paperwork in hand, but it was pretty tempting. Several days later the license arrived from the FCC and WN4RJG was on the air.

Novices were restricted to the 80, 40, and 15 meter bands using 75 Watts input CW and crystal control. No VFO's were allowed. These restrictions were to limit the mayhem that us newbies might create. Although it sounds pretty limiting, looking back on it, I think I had as much, if not more, fun as a novice due to the challenges of operating with crystal control and relatively low power.

Some time after becoming comfortable with the on air CW operating procedures, and achieving some proficiency in Morse code, I was ready to upgrade the license and expand the

bands and modes available to me. This meant a trip to either the Atlanta FCC field office or the Knoxville post office was in order. General, Advanced, and Extra (which at that time required 2 years experience as a General class or higher) class testing was given quarterly in Knoxville at the post office with a FCC examiner. You made an appointment, and showed up at the post office along with many other hams from around the region, and waited for your turn to take the test. There was such a large group there to take the 13 wpm code test that the examiner divided us into two groups. I was in the second group, and waited outside the large room with poor acoustics where the first group was seated. A mechanical instructograph machine was used to send the code. I thought that since the room acoustics were so poor that I would copy what was being sent to the first group as practice, assuming that our session would use different text. We were seated after the first group finished their code testing, and our session soon began. I quickly realized that the text being sent was exactly the same as what was previously used, so the test was rather anticlimactic since I knew what the characters would be before they were sent. They did not require a sending test, since they figured that if you could receive Morse, you could probably send it as well. Plus, with that many people it would have taken quite a while, and I'm sure the examiner wanted to get out of there as soon as possible. I took the General and Advanced written elements at the same time, not really expecting to pass the Advanced, since I had not spent much time studying for it, preferring to concentrate on passing the General. When the examiner called my name, I was surprised to learn that I was now an Advanced class operator, trading the "N" for a "B", becoming WB4RJG. This conferred more privileges than General, and was quite a step up from novice. The most important new privilege was the ability to now use the phone bands, and SSB.

Now I was ready to fire up my newly acquired R.L. Drake T-4XB transmitter on the 20 meter phone band. My first SSB contact was a station in Israel, so I immediately became hooked on DX'ing. It wasn't too long until I had received QSL cards from enough stations to qualify for the ARRL WAC (worked all continents) award, followed by their DXCC (DX Century Club, awarded for contacting 100 countries). I also enjoyed contesting, and participated in many state QSO parties and ARRL events. Field Day was always an enjoyable event, and I was able to participate in many with the KARC./BMRC through the years at various locations.

I attended the University of Tennessee at Knoxville majoring in Electrical Engineering. There were many hams there, but no university sponsored amateur radio club at that time. Fortunately, the new electrical engineering department head, Dr. Joseph Googe, decided that one was needed, even though he was not a ham. He had some extra funds available, and said that the Electrical Engineering building (Ferris Hall) needed a tower and antenna, and some decent equipment. He offered to set up a station inside the building if we would form a club. That was an offer that was too good to refuse, so a club was soon formed, and after some difficulty obtained the call sign W4EAL, which was a memorial call for Richard Stansfield, a well known ham and long time blind concessionaire on campus. I was president of the club at one time. While at UT, I joined the flying club and eventually obtained a private pilot certificate. For no particular reason, I also obtained what is now the General Radiotelephone certificate.

After graduating with a degree in Electrical Engineering in 1976, I accepted a job with Rockwell International's Collins Telecommunications Systems Division in Richardson, Texas. I initially worked in the International division on airport communications systems for Saudi

Arabia and Yemen. After being told in no uncertain terms that I needed to bring in my passport so I could get a visa for Saudi and Yemen, I decided that it might be a good idea to look for other opportunities within the company. Coincidentally, around that time Collins avionics division in Cedar Rapids, Iowa was in desperate need of engineers due to recently being awarded the largest contract in their history by Boeing to provide a glass panel avionics suite for the newly designed 757/767 platform. About a dozen of us were offered positions in the avionics group, and guaranteed a job back in Dallas after a year or so in Iowa.

Cedar Rapids, Iowa was the birthplace of Art Collins and later Collins Radio corporation, so it was somewhat of a Mecca for hams. Art Collins, the founder and namesake, was of course a ham, W0CXX, as well as many of his engineers.

While at the avionics group, I did design work on switching power supplies used on the autopilot mode control panel, which is the pilot's interface to the autopilot. I was fortunate to work with true experts in the field, and learned quite a bit in the process. Ultimately, I returned to Dallas, and worked at Love Field for Rockwell's airborne systems division. One of the ongoing major projects was TACAMO, which was an airborne (via C-130's) communications platform whose mission was to relay launch orders to submarines. The aircraft was essentially capable of DC to light communications, as it contained everything from a 250 KW VLF transmitter with accompanying 5 mile long antenna, to satellite radios, and everything in between. I dealt primarily with HF gear, and was able to operate occasionally in the amateur bands while on long test flights. Some of the other airborne projects that I worked on were rather interesting, such as Commando Solo, which among other things, contained a 150 milliwatt in 10 KW out HF autotune transmitter. Somewhere along the line I became a licensed professional engineer. I also obtained a Scuba certification, which was probably due to watching too many Sea Hunt episodes on TV in the 60's.

I eventually returned to East Tennessee after accepting a job with Philips Consumer Electronics in Knoxville. At the time, Philips (Magnavox) had a rather large television manufacturing plant in Greeneville, TN. At Philips, I did design work on the (new at the time) Universal remote control, which is pretty standard equipment these days. It was rather interesting to see a design go to production in a high volume environment, where literally millions were produced.

I was ready for something different after a few years of consumer electronics at Philips, and discovered that a company in Knoxville, CTI PET systems was looking for someone with a background in RF systems to work on a small medical cyclotron. I knew next to nothing about cyclotrons or PET (positron emission tomography), so this sounded like a good way to learn something new. At the time, CTI had less than 200 employees, but was a world leader in PET technology, with systems installed worldwide. PET scanners require the use of various radioactive short half life isotopes (ranging from less than 2 minutes to around 90 minutes) which are infused into patients for the scan. Since the half lives are so short, the isotopes must be made on site, hence the need for the cyclotron. The cyclotron used a large (2 Tesla) magnet, large high vacuum chamber and 10 kW RF system to produce the radioactive isotopes by bombarding various substances with protons. This was pretty interesting work, much different from anything I had done previously. As a diversion, I learned to snow ski at a somewhat advanced age, and was able to go on many great ski vacations both in the US and Europe.

In the 90's, before everyone had a cell phone, I became interested in how that system worked, and went to work for United States Cellular in Knoxville as an RF Engineer. In the early days of system build, a lot of effort went in to quickly putting up cell sites in order to "claim" territory that was awarded to a provider after winning a government auction for that territory. If the winning bidder was unable to cover (at least according to theoretical coverage maps) the geographic area they were awarded after a certain period of time, that area was awarded to another bidder. It was sort of a gold rush to make sure all your areas were covered. Our southeastern markets stretched from North Carolina to Florida. It would have been impossible to design so many sites in such a relatively short time without the aid of computer software that generated coverage maps based on such factors as terrain, tower height, antenna patterns and gain, and of course power output of the amplifiers. This design activity also involved path analysis for microwave links.

For the last several years, the majority of my amateur radio activity has been centered around ARRL Field Day. I was part of the N4IR East Tennessee Contesters group that placed 1st nationally for several years, details can be found here: <https://www.qsl.net/n4ir/> I have also operated at the Bristol ARC FD in years past. I am glad that the Kingsport ARC is still active and introducing new folks to the hobby, just as it brought me and several others into the hobby many years ago.

73 de K4DR