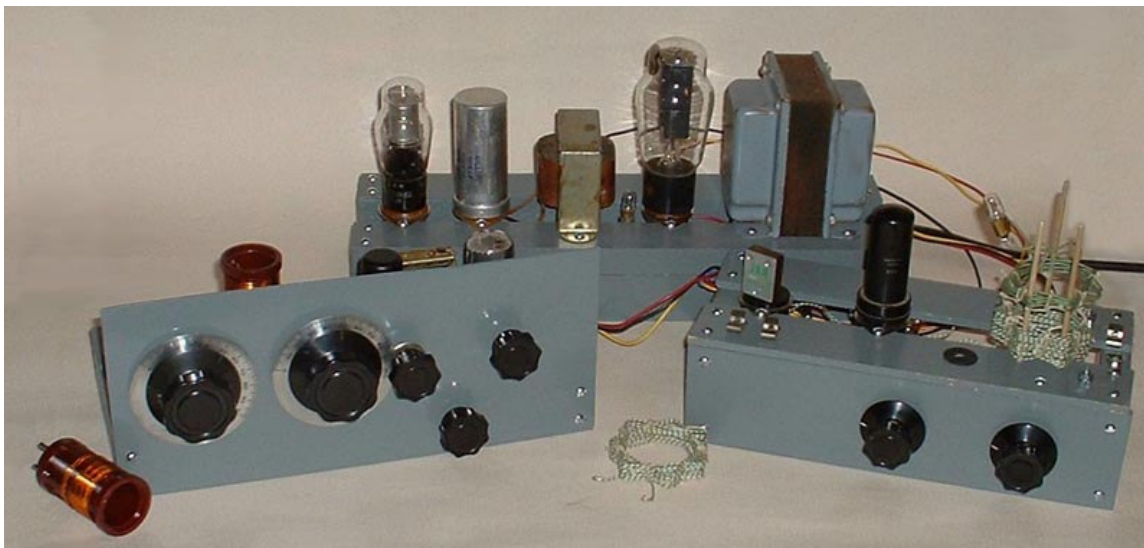


# A 1951 Beginner/Novice Station



## Introduction

In 1951 "The Roy Rogers Show," "I Love Lucy" and "Mr. Wizard" were all new to television. In 1951 General Douglas MacArthur, relieved of his duties by President Truman, bid farewell to Congress. In 1951 20-year-old Willie Mays joined the Giants. Also, in 1951, the Novice license was introduced. This new license was nonrenewable and good for only one year. Novices had limited frequency privileges and only CW privileges on HF. Transmitters had to be crystal controlled and 75 watts maximum input power. But, by giving the beginner an on-the-air chance to build code speed to 13 WPM, the new Novice license was an effective stepping stone to the General Class license.

The July 1951 QST editorial welcomed the new novices and pledged an increasing amount of material more directly useful to the beginner. Articles covering simple transmitters, receivers and basic workshop practices were promised. According to this QST editorial "Nothing can compare with the thrill of the first QSO with equipment you have constructed or assembled with your own hands" and "your primary object in ham radio is communication". At the same time 1951 novice or beginner station projects assumed a tight budget, were of simple design and required a minimum of tools and special parts to assemble. Ideally most parts could be scavenged from old TVs or table radios. Looking around my shack at the equipment I use today I wondered. Could new novices in 1951 using simple equipment really expect much communication? How well did equipment like this perform?

In order to get an idea of the effectiveness of a 1951 novice station I build one and put it on the air. I based my transmitter on the 6AG7 "Novice One Tuber"

transmitter (May, June 1951 QST). This design was updated in Nov 1953 QST to cover 80 and 40 and stayed in the ARRL handbooks through 1957. The receiver I elected to build is based on the "First Receiver for the Novice" (Aug 1951 QST).

## Station Description

The "First Receiver for the Novice" is a two tube regen. A 6SJ7 regenerative detector is followed by a 6SN7 dual triode providing two stages of audio amplification. It uses home wound coils to cover both 80 and 40 meters. Controls include bandset, electrical/mechanical bandspread, regeneration and volume. With careful tuning SSB and CW signals can be copied but selectivity is lacking and stability is marginal. Like most simple receivers of its day this one does not support a loud speaker. It is a headphones only set. This is definitely a beginner's receiver.

The "Novice One Tuber" is a one tube crystal controlled oscillator with pi-network output. Electrically mine is the two band version of the early 1950s ARRL Novice One Tuber. Plug-in coils or a bandswitch are eliminated by using homemade "basket weave" coils and supporting them on three pop sickle sticks. Instead of an expensive tuning meter it uses two small pilot lights. It runs about 10 watts input and puts out 3 to 4 watts on either 80 or 40.

The power supply is fairly straight forward supplying filament voltage, 350 volts for the transmitter and 150 volts for the receiver.

All of the parts of this station are mounted on wooden chassis. Many late 40s and early 50s rigs used this construction technique to cut cost and complexity. The slats are spaced properly to allow mounting the tube sockets, transformers and filter capacitor. This works fine as long as shielding is not required. It saved the beginner from buying and using the tools required to bend, cut and hole punch a metal chassis. The wooden slats could even be nailed rather than screwed together to further simplify construction.

In 1951 many beginners painted and dressed up their homebrew, old and military surplus rigs to resemble current "store bought" radios. Many older rigs received a new paint job and knobs in the process. In some cases out of date tubes and circuits were updated to 1951 standards. In 1951 the modern look suggesting reliability and durability included battleship gray, not stained and varnished wood, the finish of the family radio in the livingroom. In keeping with these times, I chose to paint the rig in battleship gray like much of the commercial equipment in 1951.

## Operating

All three pieces of my 1951 Novice Station work together pretty well. They each represent about the same level of complexity and sophistication. With some

frequency and schedule planning I've been able to have several QSOs using this station. All reported a nice sounding signal including a 599 from near Detroit, MI. The 80 and 40 QRP frequencies 3560 and 7040 usually worked best for starting a QSO along with the 80 and 40 meter "novice" bands (3675-3725 and 7100-7150).

Using this station did present enough challenge that each QSO felt like an accomplishment. I imagine the 1951 novice moving beyond the two tube regen receiver fairly quickly. The 10 watt power level of the single 6AG7 is fine for an experienced operator but, again, the new novice would have looked forward to running the 75 watt "novice gallon".

## **Operating Comments/Notes**

Keep in mind that I purposely kept this station at the 1951 novice/beginner level. Two options to improve the performance of receiver require an additional tube. One would be to add an RF stage with gain control (a la National SW-3), the other is to add a mixer/converter stage making this a simple superhet. Similarly I could have added an amplifier stage beyond the one tube oscillator/transmitter. I chose to forgo these complexity increasing options so that I could see how well the beginner solution worked.

A tendency to overload was one of the biggest drawbacks to the simple regen receiver design. Strong signals were distorted and interfered with nearby QSOs. Decreasing the antenna coupling helped the overload/distortion problem at the expense of sensitivity.

Lack of selectivity was another receiver limitation that had to be lived with. Unfortunately, in 1951, the novice requirement for crystal control made the selectivity problem more apparent. Few novices had a wide selection of crystals. QSOs, therefore, tended to occupy two frequencies: the transmit frequencies of both stations involved. In addition, many times operators had to transmit without monitoring their own frequency. Many transmissions started with a "sri QRM" report.

In my original station configuration I had an antenna tuner between the TR switch and the antenna. Both the receiver and the transmitter "saw" the antenna tuner as part of the antenna system. I found the regeneration point and frequency varied a lot as I adjusted the antenna tuner for best transmitter loading. I removed the antenna tuner from the station configuration and depended on the transmitter pi-network to load into my 105' inverted L. This step actually made the station more like my 1951 goal and resulted in an easier to use station.

I had no way to accurately zero beat my transmitter frequency. I finally used my station receiver/code monitor (a 75A3) to listen for the receiver regeneration action. If I heard both the transmitter and the receiver regenerative detector

oscillating on the same 75A3 dial setting, I was on frequency. This was probably not a problem in 1951 since all novices were "rock bound". No one expected a response to a CQ to be on their transmit frequency. Everyone tuned the band looking for a call. That habit was discontinued with the very stable and accurate transceivers that have been in use for several years.

I found the receiver sensitive to the power supply transformer magnetic field. I heard a loud 60 cycle hum all across the band. Placing the power supply as far as possible from the receiver cured this problem.

Some of today's hams might complain about crystal control. Given the basic receiver of the 50s era, crystal control helped a lot to keep novices legal. A crystal is always on frequency. A drifty VFO tracked by a receiver with minimal frequency readout accuracy in a relatively small slice of the ham band leads to a high risk of one operating out of the band limits. I found crystal control to be a good design balance with the receiver.

## **Conclusion**

As a beginner station, this receiver and transmitter would have gotten the new novice on the air with a minimum investment. Some contacts may have been made but it would not have been easy. I suspect that many would have become discouraged and dropped out before moving to something better.

By the 1956 ARRL Handbook the two tube regen was being presented only as the minimum "shortwave receiver" useful for code practice and for listening to amateur and commercial stations. By then a three tube superhet (converter + regen detector + audio amp) is shown as minimum receiver for the novice. It is also interesting to note that by 1958 the entry novice transmitter shown in the ARRL Handbook was a 3-band 6DQ6 transmitter running 35 watts.