

Poor Boy's Collins; The TCS

Mike Hoddy G0JXX

Having acquired a working TCS RX / TX and connectors (thanks Chris 'BYZ') I started to look up further information on how the TCS equipment was used as most of the information seemed to show it in P/T boats and other similar installations but I felt sure it would have had other more general uses.

The compact design and robustness of the construction make this a viable mobile / portable station for VMARS type activity and at present is realistically priced, in most cases, even as an entry item to the hobby. The Following is a slightly edited version of information collated from the Internet on the TCS range of equipment and is published with the kind permission of Dennis Starks of the Military Collectors Group (USA). Please note, that references to 'us', refers to the USA not VMARS or UK!! There are a further 15(!) pages of information but for the sake of brevity here is the main piece. I have kept the US spelling in the article so just try to imagine you are from New York.....

The Legend Begins.



The G0JXX TCS as received

The TCS series of radio equipment is one of those success stories stemming from WW-II that has few rivals, & no equals. Its story begins in 1939 & the first contracts let with Collins by the US Navy, interestingly, the first ART-13 (ATZ's) also from Collins, & TBX from GE, were ordered this same year. The Navy knew something the rest of our country's military didn't! Early examples of the set differ mainly in the coil design used in the IF's, progressing in later years to the more accepted SO-239 type Antenna connections on the last sets built. It's design simplicity, extreme ruggedness, excellent frequency stability, and compact size would all combine to spell its success for many years to come. It would be used in virtually every military capacity imaginable, & in post war years continue to serve in military, civilian, & commercial roles. By the end of its military career it will have served

for more than 20 years, & will have known no equivalent, or rival, either military or commercial, even though no sets were built after WW-II.

Wartime propaganda by Collins in all the magazines of the time, usually always depicted a PT boat in the background. I suppose they then thought this was the most

glamorous role their radio could be serving in, thus best suited to publicize their participation in the war effort. True, the TCS was the preferred radio set for PT boats, & I would suspect that they were all outfitted with them even well after the war. But its use was not limited to these fine boats. The TCS was used in every wartime capacity we can think of, including armored vehicles, jeeps, aircraft, landing craft, fixed & semi fixed shore & field stations, & ships both large & small of every description.

Even the Army Signal Corps had a stock number for the TCS (still, as of 1953). One of very few Naval radios to be accepted by the Army, though we don't know when, where, or in what capacity they used them. This is very significant, as the technical rivalry, & competition between the Signal Corp, & Navy was VERY intense! For the Army to accept a radio of the Navy's would have been most degrading, & vice versa. It would not be until the Army entered the war in the Pacific that some cooperation between the services would be seen. And then only because of the need for compatibility in equipment types. This for two main reasons, #1) the Army had tied up most of the countries manufacturing facilities with their equipment types.



#2) & most important, to simplify the immense supply/logistics problems associated with the support of forces in the field.

Technical Marvel!

Years ago, a one time friend of mine, upon seeing my TCS said, "you could always tell when it was one of those things transmitting", "they had the prettiest CW signal on the air"! This one time friend had been an Army Signalman during WW-II in the Pacific. Though many of his war stories turned out later to be bull shit, this one has been collaborated many times.

The design of the TCS family is very simple, so simple in fact that for many years I couldn't understand why they had done what they did. For instance, why two 1625's in the RF PA for CW, but only one was used for AM? We all know well, that its 1625 modulator pair would easily modulate both the output tubes! Why two oscillator circuits? The MO has an oscillator tube & circuit completely separate from the xtal oscillator which has it's own! Conventional equipment of the time simply switched in, or out a couple of parts to change between Xtal or MO service, but using a common circuit. What a waist of parts & space I thought. Boy was I dumb!

Several years ago while in a super QSO on 3880, at 04:00 in the morning, my TCS receiver began to waiver. I was frantic, the conditions were perfect, all the best east coast guys were on the air (I'm in the Midwest). And they could hear me! I had to get it back up! I jerked open the receiver & started thumping tubes, hit an IF tube & the thing went nuts. What to do now? The needed tube was out in the critter infested, pitch black shed, along with several thousand other ones! It hit me! I pulled the tube from the xtal oscillator swapping it for the IF tube, what the hell, I wasn't using the xtal osc, rather the MO as usual. It worked and I was back on the air without missing one round. It later dawned on me what had been going on in those brilliant Collins engineers' minds! The reason for all those redundant circuits & tube types.

Unlike virtually every other piece of electronic equipment built for the military until the advent of the transistor, the TCS did not have a spare parts kit. It was it's own spare parts kit! All it's spare parts were very neatly stored in a place were they could be



Picture from SRS website

immediately found, under the most adverse of conditions. Picture yourself in a combat environment, similar to the above story except people are shooting at you, and your boat is bouncing all over the place. The very same thing would take place. If your transmitters PA quit during CW ops, you simply robbed a tube from the modulator. What the hell, it was only needed with phone ops. If it screwed up during AM phone ops, you simply robbed the extra PA tube used only with CW, it could then be swapped to either the PA or modulator. Now we know the reason for two tubes in the CW mode & one in AM! If any other tube in the transmitter failed, it could be replaced by the one in the unused oscillator. Now we know why the redundant oscillator circuits! What kind of a warped, but far sighted and brilliant mind came up with this! The only spare parts kit known, is one for the later versions that either had factory, or field installed noise limiters. This was because the tube used in this circuit did not already exists elsewhere in the radio set. By the way, this noise limiter really works!

Continuing Legacy.

Use of the TCS continued on for many years. Though some experts have said that it remained in inventory, but was no longer a front line radio after WW-II. This couldn't be more false. As of 1958, the TCS was still being installed in new M38A1 Jeeps for use by Marine Pathfinders (among others), along with a mixture of other Collins aircraft crap.

Long before this time, some variants had received joint service designations such as MRC-6 having transmitter & receiver group OA-26A (the TCS). The MRC-18 was a large field transportable system which contain among many other items, the TCS, these systems were ordered in 1949. The MRC-22 combined a TCS, ARC-1, and an ARC-27, these all mounted in a M-115 trailer circa 1951. Also with an order date of 1951 was the MRC-23 which contained a TCS, TDE, URT-7, FRR-27, & a URR-13, all mounted in a K-53 6x6 truck. The MRC-24 had a TCS-12, TDQ, RCK, MAR, & a RCH. Both the transmitter and the receiver were assigned standard/current AN type R-* & T-* numbers, but these don't come to mind at present.

The story goes on, suffice to say that the TCS also saw extensive service as a commercial (via the Sante Fe rail road), marine (until the demise if the HF/AM marine band), & of course Ham's. Worthy of note, the ART-13 was used in much the same ways when more RF power was thought to be needed. We all know the standard for comparison this radio set. But somebody else can write that story.

The Story Continues,

There were also some encounters in Vietnam with the TCS, but I'll let those tell the story that are better qualified. At least as late as 1980 a friend (even though he was a Navy ET) remembers servicing TCS control heads on the bridge of a Naval vessel, though

they were no longer connected to TCS's. But by this time, 1985, they were no longer connected to TCS's, but instead used to remotely control URC-9's, but this is still further evidence of the long life of the TCS.

WA4OID (Sweetwater Bob) who's exploits today on 75mtrs with his TCS & Command sets are legend, while in Naval service in the early 1960's remembers using the TCS as the ships ham shack. He states, that because he was a Snipe/Diver, it was the only rig the Radioman would let him use. This most likely because of the radio's simple operation combined with the fact that most Snipes were not known for their vast intelligence. Even so, he wasn't allowed to touch the knobs.

One more personal war story. My good friend, George Coffey (WD0ALN) once came to visit. In an attempt to brag on my newly up and running TCS, I told him "watch this", "I'll go over there & key that thing up & it'll come up on 3880". It had been running the night before & I usually never shut it off. I went over & keyed it, but nothing happened! I'd had turned the damn thing off. Turning it back on, I waited a few seconds & pressed the T-17's PTT. As the heaters lit up, & the antenna current meter began to deflect, the LED's on the freq counter flashed 3880, this to the amazement of us

both! How's that for stability from a 50 year old, tube type, MO controlled radio, that's never had anything done to it except one IF tube changed!!! The receiver is every bit as impressive. Eat your heart's out Icom, Yaesu, & Kenwood! Lets see how many of those Oriental pieces of shit are still on the air after fifty years!

I gave George a junker TCS receiver & transmitter before he left, with the condition that he had to put them on the air, or I wanted them back. Within a couple days he had the receiver up and running. I don't think it's been turned off in 4 years. This even though it is flanked on either side by a Hammerlund SP-600, & Drake Twins. Not much chance of my ever getting that set back!

Only one military radio comes to mind that served longer in our nations defense. Though I had known it for some time, it was Danny Cahn that made it click. The CRT-3 (Gibson Girl) is the only known radio to be used unchanged in military service longer than the TCS. This until the recent demise of the 500kc marine distress frequency, or it would most likely still be around celebrating it's 55th birthday. Sadly though, this was a WW-II German development, that was simply refined by us.