

SECTION I

RADIO AND GENERAL.

Rl.6. Notes on the Performance of Wireless Set No.19, Mk.II, as used by the U.S. Marine Corps in the Southwest Pacific Theatre.(i) General.

The following information on the performance of Wireless Set No.19, Mk.II in the Southwest Pacific Theatre was obtained from a U.S. Marine Corps Officer who accompanied the first Marine squadrons of light tanks to Guadalcanal in 1942. These squadrons were equipped with Wireless Sets No. 19, Mk. II (manufactured in the U.S.) of which roughly 500 were supplied to the U.S. Marine Corps with a generous proportion of spares. The conditions in which the sets were required to operate were particularly bad in view of the fact that there was very little in the way of facilities for maintenance. In general, an enormous amount of time had to be spent in maintenance in order that any sort of service might be obtained from the sets, and in view of the limited facilities various makeshift expedients had to be employed.

(ii) Main Causes of Failure.

It appears that the main causes of failure were due to breakdowns in components of the set and supply unit. The small iron-cored transformers in the radio set broke down very frequently and it was usually found that the fault could be attributed to corrosion of the fine wires near the ends of the windings at a point where they are soldered to the lead-out wires. Supply unit rotary transformers* manufactured by Eicor incorporated being particularly bad in this respect. The Carter rotary transformers appeared to be better impregnated, since breakdowns in the armature windings of these machines were not so frequent, but it was observed that the voltage regulation of the Carter product was very bad compared with that of the Eicor machine when operative. The control units were found to fail frequently owing to excessive corrosion and fungus growths; a frequent cause of failure was due to the perishing of the cotton covering on the hook-up wires in these units. In general it was found that the effects of the humid climate upon the radio sets were such as to demand the use of temporary installations which could be readily disassembled for drying out in an oven as frequently as once in every 24 hours.

* also failed frequently, the rotary transformers

(iii) The performance of the harness

The most outstanding fault of the harness appears to be the use of leads with braided cotton covering for the microphone and headset assembly. The cotton covering appears to have been most attractive to the fungoid growth which flourishes in this particular theatre, and it was found that much of this braided material had perished after a period of as little as 24 - 36 hours. Much trouble was also caused by fungus growth upon the bakelite of the microphone housing in the neighbourhood of the pressel switch. The cotton covering on the wires in the shielded connectors was also found to be subject to rapid deterioration due to fungus; the rubber insulation of these wires did not necessarily perish but it appears to have allowed moisture to penetrate, since the wires themselves were frequently subject to serious corrosion. In order to combat to some extent the effects of moisture and fungus upon the harness, it was found necessary to tape and seal the junctions of the plugs and sockets in a manner sufficiently thorough to render connection and disconnection of the harness impracticable.