



XTEJ Radio Transmitting Equipment

■ Recently the Navy awarded a contract for the development of an all-purpose transmitting equipment for ship-board installation. The equipment will be constructed for use on both surface and under-surface vessels and will include the best design features established in recent years to cover all present requirements for low-power communication transmission in the frequency range 175-26000 kc, and medium-power transmission in the range 2000-26000 kc. Special emphasis has been placed on compact, light-weight construction and simplicity of operation, maintenance, and installation. In general the

design of the TEJ is intended to make it a feasible standard replacement for many diverse types of equipment now in use by the Navy.

The proposed basic equipment in its entirety will consist of two identical 50-watt transmitters and a 500-watt power amplifier which may be excited by either of the 50 watt units. The two 50 watt transmitters may be used for simultaneous operation as each will be a completely self-contained and entirely independent unit. Design provisions have been incorporated for optional operation of the equipment from either a-c or d-c power line sources. Each 50-watt transmitter and the 500-watt power amplifier will operate at all times into a 50-ohm solid-dielectric transmission line and will be capable of utilizing either a 35-foot whip or broad-band antenna. Transmission line to antenna coupling will be provided at the location of the antenna. Circuits for CW, MCW, voice, and frequency-shift keying are included in the design of the model, and operation on any one of these emissions will not require the use of auxiliary equipment. Vacuum tube keying will be employed to provide keying speeds up to 500 words per minute for A1 type emission and up to 100 words per minute for A2 emission. The equipment will be continuously variable throughout the frequency range, and will incorporate ganged controls to facilitate manual tuning. In addition to the manual tuning, telephone-dial rapid selection of ten preset channels will be provided for each 50-watt transmitter and the 500-watt power amplifier. The equipment will be capable of operation from the front panel position and up to 10 remote stations for each 50-watt transmitter and the 500-watt amplifier. Each remote position will provide selection of 10 quick-shift preset frequency channels, type of emission (A1, A2, A3, and F), and indication of transmitter operation. The equipment will also be capable of complete remote operation when connected into present ships control systems and a proposed master ships control system now under development.

An entirely new type of unit construction will be used for the equipment which will permit a variety of arrangements at installation. Light-weight drawer sections will be employed and will stack, one above another, in the manner of a sectional book case, to form a single compact assembly. Each of the two 50-watt transmitters and the 500-watt power amplifier will be contained in separate sections which may be rapidly positioned in or removed from the final assembly. This type of construction permits optional installations made up from the standard units. No external wiring during installation will be necessary and with all sections assembled the equipment will not exceed the dimensions of 72" high, 32" wide and 24" deep. The various chassis will be designed to slide into the front of the sections on runners

and will be guided and positioned by stops and pins. Electrical connections will be made automatically by plugs and jacks when the chassis are positioned in the sections. Complete accessibility to the components will be available when the chassis are removed from the sections. Under this condition electrical connections for test purposes will be completed by cables furnished with the equipment.

The proposed basic equipment consists of two 50-watt transmitters and one 500-watt power amplifier. The design of the TEJ radio communication transmitting equipment, however, permits the installation of the necessary number of units to meet the full type allowance of practically all classes of navy vessels. Various possible installation arrangements are as follows:

- (a) One 50-watt transmitter.
- (b) Two 50-watt transmitters capable of simultaneous operation.
- (c) Three 50-watt transmitters capable of simultaneous operation.
- (d) One 50-watt and one 500-watt transmitter capable of simultaneous operation.
- (e) Two 50-watt transmitters and one 500-watt transmitter capable of simultaneous operation.
- (f) One 500-watt transmitter.
- (g) Two 500-watt transmitters capable of simultaneous operation.
- (h) Two 50-watt transmitters and two 500-watt transmitters capable of simultaneous operation and requiring deck space of two transmitters.
- (i) Three 50-watt transmitters and three 500-watt transmitters capable of simultaneous operation and requiring deck space of three transmitters.

