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SOURCE Radio, No 8, 1950, p 17.

COMMUNICATIONS EQUIPMENT ON SOVIET SHIPS

EMERGENCY RADIO FOR MERCHANT SHIPS

A. Kaufman  
 Vladivostok

The regulations of the Maritime Registry of the USSR provide that every merchant ship should include in its radio station, an mf emergency receiver which either does not require a power supply (crystal set) or has a self-contained power supply. Up to present, receivers with crystal detectors have been used as emergency radios on all vessels because batteries were considered to be cumbersome and unreliable. In addition, the power of maritime spark transmitters reached 3-5 kw which permitted using crystal sets. However, these circumstances no longer hold true.

Radio engineering has now produced many new types of emergency equipment applicable to ships. Radio amateurs have invented a number of devices and accessories in other fields and have rendered valuable services to various branches of the socialistic economy. It would be most valuable if these amateur radio designers would now design an emergency set urgently needed by the Merchant Marine.

Such equipment would be widely used in fishing boats and in arctic expedition ships, as well as for pleasure craft which often have no radio equipment.

Perfecting the present emergency receivers might lead to development of a universal type of emergency equipment in which a vacuum-tube detector and amplifier must, of course, be used. Regenerative circuits make it possible to unite, in one apparatus, the functions of a receiver, sufficiently sensitive for distance reception, a radio direction finder effective at normal ranges, and an adequate, though low-powered, transmitter. On a ship such an apparatus could serve as an emergency receiver. On a launch it would make it possible to listen, take bearings, and send out calls giving information on the condition of the crew.

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The starting point in designing this type of equipment should be to have the tubes and supply source small in size and light in weight. Here the designer will run into difficulties in attempting to obtain the desirable power, 10 w, for transmitters in small boats. Attention must also be paid to the structural reliability of this equipment. For the sake of simplicity, it would have to operate on one band, although it might be possible to include a short-wave band.

An emergency receiver-transmitter must be light, portable and as economical as possible. Hence, it is necessary to select a circuit in which the same tube is utilized for reception and transmission. The detector stage must be regenerative, but in the transmitter it should function as an oscillator-exciter. In employing it as a detector in the receiver, feedback control must be quite smooth and simple enough so that it can be managed by an unskilled member of the crew.

The hf stage must act as an amplifier for both receiver and transmitter. The lf stage must function as an amplifier in the receiver and as a modulator in the transmitter. The modulator should ensure operation by tone-modulated wave or telephone. It is advisable to have interchangeable tubes in both stages and to provide for an outlet from the detector-oscillator stage to the telephone, antenna, and key.

Small-sized telescopic and loop antennas should be employed. Both types are obviously required since the receiver-transmitter is more suitable for a nondirectional antenna, while the direction finder would require a loop antenna.

The receiver-transmitter must be made for a range including both the distress and operating bands for ships (600, 661 and 706 m) as well as the air force distress band of 900 m (air search frequently uses 900 m also) and the radiogoniometer and radio beacon wave lengths of 980-1,200 m. Consequently, it must cover a frequency range of 250 to 515 kc (583-1,200 m). Although the tuning must be fixed for 600, 661 and 900 m, it should also be possible to obtain variable tuning over the whole range.

The receiver-transmitter must have a waterproof case and should be installed on one of the free panels of the ship's (or launch's) radio equipment where it will be easily accessible.

#### RADIO IN RIVER SHIPPING

Yu. Lokshin

Lack of communication between a tugboat and the barges following it was one of the greatest drawbacks to river transport.

In 1949, tugboats began to be supplied with two-way radio-telephone equipment for communication between tugboat and barges. This equipment is powered by a 12-v storage battery or from the 11-v tugboat mains. The receiver can be left on when the transmitter is switched off, thus economizing on current.

Steamers meeting en route can also communicate with each other through these radio stations. Similar apparatus, with sufficient power to cover a distance of 35-50 km, is being introduced on small coastal craft. The steamship

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companies of the Main Administration of the Eastern Fleet are using a new device which permits the station to make automatic selective calls. This is accomplished by a telephonic-dispatching method with selective call signaling. The dispatcher can communicate at any moment with a given ship, and give directions or receive necessary information.

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