

The allocation of high frequencies and their efficient utilization requires reasonably accurate information on the transmission properties of the ionosphere which vary with the season, the sunspot cycle and other factors. This information is obtained from hourly measurements of the ionosphere made at some 70 points throughout the world and analyzed and correlated by the Radio Physics Laboratory, Defence Research Board, Ottawa, and by the United States Bureau of Standards at Washington, D.C. The Canadian measurement stations are located at St. John's, Nfld.; Resolute Bay, Cornwallis Island and Baker Lake, N.W.T.; Fort Chimo, Que.; Churchill and Headingly, Man.; Ottawa, Ont.; and Prince Rupert, B.C. Eight frequency monitoring stations are maintained at suitable points across Canada to check operating frequencies of all classes of radio stations to ensure that they do not depart from the assigned frequency by an amount greater than that permitted by the international conventions.

Under the Safety of Life at Sea Convention and the Canada Shipping Act, most passenger ships and larger cargo ships must be fitted with radiotelegraph or radiotelephone equipment, primarily for distress use. Approval is given for each make and model of equipment that comes up to the required standard and, in addition, the ship station as a whole is inspected before the licence is issued and periodically thereafter. Foreign ships are subject to inspection before sailing from Canadian ports to ensure that they conform with the requirements of the Safety of Life at Sea Convention. Also, certain passenger, cargo, and other ships plying the Great Lakes are inspected to ensure compliance with the requirements of the Agreement between Canada and the United States for the Promotion of Safety on the Great Lakes by means of Radio.

Standards have been developed for the installation of aircraft radio stations specifying in detail the techniques and materials that may be used, to ensure that such stations will satisfactorily perform the function for which they are intended. Rigid standards are also in effect for the environmental testing of individual units of aircraft radio equipment, and approval is given to manufacturers for each model of equipment which has been demonstrated to meet the requirements. Inspections of radio stations aboard civil aircraft of all operational categories are carried out at prescribed periods. In-flight inspections of the radio communications and navigational aspects of proposed new air carrier operations, encompassing both land and oceanic routes, are also made as required.

Marine and aeronautical radio operator standards and related regulations are covered by international agreement. The International Telecommunication Convention prescribes the qualifications for radio operators on mobile stations and the Radio Act provides that all operators, both commercial and amateur, must pass examinations to prove their ability to operate the respective classes of stations on which they are engaged. Competent operators are required on all classes of stations in order that the technical requirements prescribed under international agreement be adhered to closely; they are particularly essential on ship and aircraft stations in the interests of safety of life.

**Investigation and Suppression of Inductive Interference.**—Under the Radio Act the use of electrical equipment that will produce harmful interference to broadcast reception is not permitted. The Telecommunications Branch of the Department of Transport maintains 60 cars equipped for measuring and locating sources of interference to broadcast reception. In addition to locating the sources of interference, advice is given as to how it may be suppressed or eliminated. These cars operate from the permanent radio inspection offices located in 27 cities throughout Canada. During the year 1956, 11,355 sources of interference were located and suppression was obtained in all but a few cases. Power lines were the largest single source of interference, constituting 37 p.c. of the total. Apart from cases of actual interference, the Branch also gives technical advice and assistance to manufacturers of electrical apparatus, in reducing to acceptable levels the radio noise (interference) produced by such apparatus.

Industrial, scientific and medical apparatus is brought under strict control in accordance with Regulations for Controlling Radio Interference and under the authority of the Radio Act. Regulations require that radiation from such apparatus, which is liable