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RADIOTELEPHONE HANDBOOK

GENERAL RADIO SERVICE



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TELECOMMUNICATIONS AND ELECTRONICS BRANCH
OTTAWA, CANADA.

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CANADA

RADIOTELEPHONE

Handbook

GENERAL RADIO SERVICE

DEPARTMENT OF TRANSPORT
TELECOMMUNICATIONS AND ELECTRONICS BRANCH
OTTAWA, CANADA

1960 2400

RADIO TELEPHONE
Handbook
CENTRAL RADIO BOARD

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ROGER DUHAMEL, F.R.S.C.
Queen's Printer and Controller of Stationery
Ottawa, 1967

Cat. No. T54-587

FOREWORD

This handbook is intended as a guide to those who operate radio stations in the General Radio Service.

Correct procedures on the part of operators of radio-telephone equipment is necessary for the efficient exchange of communications. It is also essential for a fair sharing of "on-the-air" time in the crowded radio spectrum.

The procedures outlined in this handbook are based upon those formulated by the International Telecommunications Union (ITU) of which Canada is a member and are those which many years of experience have proven to be both efficient and effective. Numerous examples are included.

This handbook is divided into two main chapters:

- (1) Regulations, including applicable extracts from the Radio Act and the General Radio Regulations, Parts I and II, made thereunder, and
- (2) Procedures. Numerous references are made throughout the text to pertinent sections of the Act and Regulations and the following abbreviations are used to identify them.

R. A. — Radio Act

G.R.R. I. — General Radio Regulations,
Part I

G.R.R. II — General Radio Regulations,
Part II

These abbreviations are followed by a number or a combination of numbers and letters designating the applicable section, sub-section and paragraph involved.

Example:—

G.R.R. II 73. (1) (b) — Paragraph (b) of sub-section (1) of section 73 of the General Radio Regulations, Part II.

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GENERAL RADIO SERVICE

Chapter 1 — Regulations

1. **REGULATIONS.** The following are extracts from the Radio Act and the General Radio Regulations, Parts I and II, pertinent to the establishment and operation of radio stations performing a General Radio Service.
- 1.1 **Extracts from Legislation.** The following extracts are provided for ready reference and convenience of GRS licensees and users. Since legislation is subject to change and amendment, it is recommended that GRS licensees and others avail themselves of the latest amendments which may be obtained from the Queen's Printer, Ottawa, and most Radio Regulations Offices.
- 1.1.1 **Radio Act**
 2. (1) In this Act,
 - (a) "broadcasting" means the dissemination of any form of radioelectric communication, including radiotelegraph, radiotelephone and the wireless transmission of writing, signs, signals, pictures and sounds of all kinds by means of Hertzian waves, intended to be received by the public either directly or through the medium of relay stations;
 - (d) "Minister" means the Minister of Transport;
 - (e) "mobile station" means any radio station, other than a ship station or a private receiving station,

that is capable of being moved and ordinarily does move;

- (f) "operator" means a person employed, engaged or authorized to operate or assist in the operation of any radio transmitter, radio receiver or other radio apparatus at any coast, land or mobile radio station;
- (g) "private receiving station" means any house, room, vehicle, ship, aircraft, or other place wherein a radio receiving set intended solely for and capable of receiving broadcasting is located or installed;
- (h) "radio apparatus" means a reasonably complete and sufficient combination of distinct radio appliances intended for or capable of being used for radioelectric communication, whether by transmission or reception or both;
- (i) "radio" means radiotelegraph, radiotelephone and any other form of radioelectric communication including the wireless transmission of writing, signs, signals, pictures and sounds of all kinds by means of Hertzian waves;
- (j) "radio station", and the same expression when abbreviated as "station", means a station, other than a private receiving station, equipped with transmitting or receiving radio apparatus or both and intended for, or capable of being used for, any form of radioelectric communication, whether by transmission or reception or both, and includes a commercial broadcasting receiving station;
- (l) "telecommunication" means, any transmission, emission or reception of signs, signals, writing,

images or sounds or intelligence of any nature by wire, radio, visual or other electromagnetic system.

5. (1) No person shall establish a radio station, or install, operate or have in his possession a radio apparatus consisting of a reasonably complete and sufficient combination of distinct radio appliances intended for or capable of being used as a radio station at any place in Canada or on any aircraft registered in Canada, except under and in accordance with a licence granted by the Minister in that behalf.

8. Any person who knowingly sends or transmits or causes to be sent or transmitted any false or fraudulent distress signal, message, call or radiogram of any kind, or who without lawful excuse interferes with or obstructs any radio-communication, is guilty of an offence and is liable, on summary conviction, to a penalty not exceeding five hundred dollars and costs or to imprisonment for a term not exceeding six months or to both fine and imprisonment. 1938, c. 50, s. 8.

(2) Except as provided in the regulations made by the Minister under this Act or in the regulations made under the *Canada Shipping Act*, every person who, having become acquainted with any radio communication transmitted otherwise than by a broadcasting station, makes use of such communication or divulges it to any person is guilty of an offence and is liable on summary conviction to a fine not exceeding five hundred dollars or to imprisonment for a term not exceeding six months or to both fine and imprisonment.

9. (1) Where a magistrate or justice of the peace is satisfied by information on oath that there is reasonable ground for believing that a radio station has been established without a licence, or that any radio apparatus has been installed, or is being operated, or is in pos-

session of any person in any place in Canada within his jurisdiction without a licence in that behalf, he may grant a search warrant to any police officer or any officer appointed in that behalf by the Minister and named in the warrant.

(2) A warrant so granted authorizes the officer named therein to enter and inspect the station or place and seize any radio apparatus there installed, or found in operation or in possession of any person. 1938, c. 50, s. 9.

10. (1) Any person who establishes a radio station or installs, operates or has in his possession a radio apparatus, in violation of the provisions of this Act is liable on summary conviction to a fine not exceeding fifty dollars and on conviction on indictment to a fine not exceeding five hundred dollars and to imprisonment for a term not exceeding twelve months, and in the case of any conviction under this section the radio apparatus or equipment, to which the offence relates, may be forfeited to Her Majesty by order of the Minister for such disposition as the Minister may direct.

(2) Whenever any person is charged with an offence against section 5 of this Act, if he is proved to be the owner, tenant or the person in control of the premises, place, aircraft, automobile or other vehicle where a radio station or radio apparatus is found, there shall be a presumption that he did establish the radio station or that he did install, operate or have the said apparatus in his possession.

1.1.2 General Radio Regulations, Part I

4. (2) The fee for a licence issued by the Minister for a radio station in Canada, in respect of a General Radio Service performed by the station, is three dollars.

7. (1) All radio stations in Canada shall observe

- (a) the International Telecommunication Convention for the time being in effect;
- (b) any regional telecommunication convention and any bilateral or multilateral telecommunication agreements to which Canada has acceded; and
- (c) any radio regulations made in accordance with such conventions or agreements.

(2) Any person who installs or operates any radio apparatus in violation of this section is guilty of an offence and liable on summary conviction to a fine not exceeding five hundred dollars.

8. When in the opinion of the Minister an emergency has arisen in which it is expedient in the public interest that Her Majesty have control over the transmission of messages by the apparatus of any radio station, the Minister may

- (a) by warrant under his hand direct that so much of the apparatus as is within Canada or the territorial waters thereof or any part of the apparatus be taken possession of in the name and on behalf of Her Majesty and be used for Her Majesty's services and subject thereto for such ordinary services as the Minister may prescribe;
- (b) instead of taking possession of the radio station, direct and authorize such persons as he may think fit on behalf of Her Majesty to assume the control of the transmission of messages by the apparatus of the station either wholly or partly and in such manner as he may direct;
- (c) direct the owner or his representative to submit to him or any person authorized by him all

messages tendered or arriving by the apparatus or any class or classes of such messages to stop or delay the transmission of any messages or deliver the same to him or his agent and generally to obey all such instructions with reference to the transmission of messages as the Minister may prescribe and the owner or his representative shall obey and conform to all such instructions; or

(d) close any radio station and cause the removal therefrom of the apparatus or any part of it; and any person authorized by the Minister for the purpose may enter upon the premises, offices and works of any radio station or any of them and take possession thereof and use the station as directed by the Minister.

10. (1) A person who is a landed immigrant within the meaning of the *Immigration Act* and is employed as a radio operator within the territorial limits of Canada is exempted from the operation of subsection (1) of section 7 of the Act, if he is the holder of a Canadian Certificate of Proficiency of any class, other than First or Second Class Radio Operator's Certificate, or is otherwise authorized by the Minister to act as a radio operator on Canadian radio stations.

(2) Subject to subsection (3), an exemption granted under this section is not valid after the expiration of six years from the date the person exempted first became a landed immigrant.

(3) Where a person exempted under this section fails to become a Canadian citizen before the expiration of six years from the date he first became a landed immigrant, the Minister may, if he is satisfied that the failure of such person to become a Canadian citizen was due to circumstances beyond that person's control,

extend the exemption for such period as the Minister deems fit.

13. A citizen of the United States who is employed as a radio operator on a radio station in Canada is exempted from the operation of subsection (1) of section 7 of the Act where, under the *General Radio Regulations, Part II*, the station licensee by whom he is employed permits him to operate a Canadian radio station.

18. (1) No person shall sell or offer for sale for use in Canada any equipment that is liable to cause interference with radio reception.

(2) Notwithstanding subsection (1), when means of suppressing the electrical disturbances cannot reasonably be incorporated into the equipment prior to its installation, such equipment may be sold if each piece of the equipment bears a permanent label in a conspicuous place indicating that the equipment is liable to cause interference with radio reception and that it is unlawful to operate the equipment until means of suppression, satisfactory to the Minister, have been applied.

(3) Any mechanical, electrical or other device, line, system, apparatus or equipment that produces electrical disturbances in excess of such limits as are specified by Order of the Minister shall be deemed, for the purposes of this section and section 19, to be equipment liable to cause interference with radio reception.

19. (1) Except in cases of emergency or with the approval of the Minister no person shall

(a) install, use or permit to be installed or used any equipment liable to cause interference with radio reception, or

(b) use or permit to be used or maintained in installed or usable condition apparatus including

that which does not produce electrical disturbances in excess of the limits referred to in subsection (3) of section 18 but which in the opinion of the Minister causes interference with the reception of an authorized radio transmission unless the electrical disturbances which the apparatus will produce have been reduced to a value specified by the Minister for the particular case.

(2) The emergency use referred to in subsection (1) shall be reported within five days to the Director, Telecommunications Branch, Department of Transport, Ottawa, and shall not be continued or repeated if in the opinion of the Minister the circumstances are not sufficient to warrant such use.

20. Every person in possession or in control of equipment that in the opinion of the Minister may cause radio interference shall, on request and at reasonable times, permit the inspection, place the equipment in operation and otherwise facilitate the making of measurements by a person appointed in that behalf by the Minister, to determine whether the equipment will cause or is liable to cause radio interference.

21. Any person who violates the provisions of section 18, 19 or 20 is guilty of an offence and liable, upon summary conviction, to a fine not exceeding fifty dollars per day for each day during which such violation continues.

22. No prosecution for a violation of section 18, 19 or 20 shall be commenced except with the consent of the Minister and, without limiting the generality of the foregoing, the Minister may withhold such consent when, in his opinion, the device, apparatus, equipment or other thing by means of which or in respect of which

the violation is alleged to have taken place is used for essential purposes for the common public good and could not be suppressed without causing a detriment to public good.

23. Neither the Minister nor any employee of the Department of Transport is liable or responsible to any person for claims for payment of charges or expenses, incidental to tests or investigations relating to equipment owned, installed, operated by, or in the possession or control of such person, in connection with the enforcement of sections, 18, 19 and 20.

1.1.3 General Radio Regulations, Part II

2. In these Regulations,

(a) "Act" means the *Radio Act*;

(b) "Department" means the Department of Transport;

(i) "service" means the radio service provided by a station and consists of the following categories of service:

(vi) "General Radio Service" — a service provided by land or mobile stations for personal or private business radiotelephone communication in the frequency band 27.00-27.23 Mc/s;

4. (1) Subject to this section, licences for radio stations may be issued only to British subjects or to companies incorporated under the laws of Canada or any of the provinces thereof, or any country of the British Commonwealth, except that licences may be issued to persons or companies who have aircraft registered in their name in Canada for the establishment

and operation on board such aircraft of radio stations for safety and navigational purposes only, in accordance with the terms of such licences.

(3) A licence for a radio station may be issued to a person who is

(b) a landed immigrant within the meaning of the *Immigration Act*, for a land or mobile radio station performing a

(iv) General Radio Service,

but no such licence shall remain in force after the holder thereof has been ordinarily resident in Canada for a period of six years, unless that person has in the meantime become a Canadian citizen, or has been exempted from the operation of subsection (1) of section 7 of the Act in accordance with section 10 of the *General Radio Regulations, Part I*.

5. (1) The Minister may in his discretion issue licences for radio stations.

(2) No licence shall be issued to individuals under twenty-one years of age except that licences may be issued

(b) to individuals over the age of eighteen years for a station performing a General Radio Service.

6. (3) A radio station is exempt from the operation of section 5 of the Act if

(a) it operates only in the frequency band 26.97 to 27.27 Mc/s;

(b) the station is used only for two-way radiotelephone communication with

(ii) subject to subsection (3a), stations performing a General Radio Service or Tourist Radio Service;

(3a) Where a radio station described in subsection (3) is used for communication with a station performing a General Radio Service or Tourist Radio Service, it is exempt from section 5 of the Act only if, while communicating with those stations, it is operated as if it were a licensed station in compliance with sections 72 to 77.

(4) No station referred to in this section shall be operated so as to cause interference to any licensed radio station or private receiving station.

(5) Where interference is caused by a station referred to in this section, the operator of the station may be required by a departmental radio inspector to take such steps as are necessary for the prevention of further interference or to restrict or cease operation of the station pending a satisfactory adjustment of the equipment.

9. (1) Licences for radio stations shall be issued in accordance with the Act and the regulations.

(2) The Minister may endorse on any licence such conditions and restrictions as he considers necessary or desirable and the person to whom the licence is issued shall comply with such conditions and restrictions.

10. The licence or a copy thereof shall be posted in a conspicuous place in the station unless otherwise stated on the licence; but in the case of a licence covering more than one station there shall be displayed at each station a notice giving the number and date of the licence and address of the office at which it is retained.

11. The licensee shall observe the provisions of the International Telecommunication Convention and any bilateral or multi-lateral telecommunication agreements for the time being in force and those regulations pertaining to the operation of radio that are made under the said convention and agreements.

12. A station shall be operated in accordance with the particulars given in the approved application for a licence.

13. No person shall, on behalf of another person, install, place in operation, repair or maintain radio apparatus for the installation and operation of which a licence is required, if no licence has been granted by the Minister.

14. (1) No licence shall be granted for the installation and operation of a radio station unless the applicant has obtained the approval of the Minister for the proposed site and for the erection thereon, of masts, towers and other vertical structures related to the antenna system of the station; and the licensee shall, when required, paint and light any such structures, in accordance with the specifications approved by the Minister.

(2) No change of approved site, masts, towers and other vertical structures related to the antenna system of any such station shall be made without further approval by the Minister.

15. (1) No person shall install, erect or construct in any area in Canada designated by the Minister for the purposes of this section any antenna for a private receiving station unless such antenna is installed, erected and constructed in conformity to specifications as set forth in Schedule I.

(2) The Minister may appoint inspectors for the enforcement and administration of this section; and any inspectors so appointed by the Minister have the powers of a peace officer.

(3) Where in the opinion of an inspector an antenna in existence in any area designated by the Minister under subsection (1) at the coming into force of this

section in that area is a dangerous thing, the owner shall upon notice from the inspector make such repairs as will render the antenna safe and shall in so doing make it conform so far as possible to the specifications referred to in subsection (1).

16. (1) No licence shall be granted for the installation and operation of a radio station unless the applicant has obtained the approval of the Minister for the radio apparatus including the antenna system to be used and no change shall be made to such apparatus without prior authority of the Minister.

(2) The Minister may require the licensee to make changes to the apparatus from time to time to conform with technical advances in the art of radio.

16A. Notwithstanding section 16, a licensee may change the radio apparatus of his licensed station if

(a) the new apparatus is of a type that has been approved by the Minister for use in the service performed by the licensed station; and

(b) no change is made in the type of emission, radio frequency, antenna characteristics, or the power to be used, as specified in

(i) the application pursuant to which the licence for the station was issued, or

(ii) the licence.

17. (1) No person shall mark or label any radio apparatus so as to indicate that the radio apparatus has been approved by the Minister unless that radio apparatus has been approved by the Minister.

(2) Each unit of radio apparatus that is marked or labelled contrary to subsection (1) is evidence of a separate violation of that subsection.

18. (1) When specified by the Minister, the station shall be equipped with

- (a) sufficient and suitable indicating instruments to confirm that the station is functioning as authorized and to enable all normal adjustments to be made without recourse to external instruments; and
- (b) an approved apparatus for the continuous visual indication of the extent of the modulation of the radio frequency carrier.

(2) All equipment and the location and arrangement thereof shall conform to specifications issued by the Minister from time to time.

(3) The licensee shall take all necessary precautions to ensure that in the construction of the transmitter and associated equipment and in the manner of installation no parts are exposed that, in the operation of the station, might constitute a danger to any person.

19. No licence granted by the Minister under these Regulations shall be transferred or assigned, but the Minister may amend a licence to show a change in the name of a licensee company if there is no change in ownership or control of the company.

20. No licence granted in respect of any station shall prejudice or affect the right of the Minister to establish, extend, maintain and work any system or systems of radio in such manner as he in his discretion sees fit nor shall anything contained in any licence prejudice or affect the right of the Minister to enter into agreements or to grant licences relative to the working and use of radio with or to any person or persons upon such terms as the Minister in his discretion sees fit.

22. The assignment of a frequency or frequencies to any station does not confer a monopoly of the use of such frequency or frequencies nor shall a licence be

construed as conferring any right of continued tenure in respect of such frequency or frequencies.

23. The frequencies, bandwidth, type of emission and power used shall be as specified by the Minister.

24. So as not to exceed the limits specified by the Minister the emitted wave shall be free from harmonics, hum, key clicks and all forms of spurious emissions.

25. (1) The station shall maintain its assigned frequency within the specified tolerance.

(2) The station shall, when so required by the Minister, be equipped with a means approved by the Minister for checking the frequency of the emitted wave.

26. No person shall so work the licensed apparatus as to interfere with the working of any radio station or private receiving station.

27. (1) No person shall transmit superfluous signals.

(2) No person shall make trials or tests except under such circumstances as preclude the possibility of interference with other stations.

(3) No person shall transmit or make a signal containing profane or obscene words or language.

29. The working of the station shall be limited to the performance of such services as are specified in the licence.

30. Unless otherwise provided by the Minister, each station communicating with other stations shall transmit its assigned call sign (or, if no call sign has been assigned, the name of the station) at least once in each transmission and at least once every thirty minutes of transmission in addition to the identification required by the nature of the service and terms of the licence.

34. (1) Any department of the Government of Canada may require the licensee, or his servants or agents, to transmit, by means of the licensed apparatus, any

message or signal on Her Majesty's Service, which shall have priority over all other messages or signals.

(2) The licensee, or his servants and agents, shall, as soon as reasonably may be, transmit the message or signal on Her Majesty's Service and shall, until transmission thereof, suspend transmission of all other messages or signals; and the licensee shall not be entitled to claim any compensation in respect of the suspension of the transmission of such messages or signals.

35. The following are exempt from section 8 of the Act:

- (a) making use of or divulging a radiocommunication transmitted otherwise than by a broadcasting station to such extent
 - (i) as may be authorized by the originator or addressee of such communication,
 - (ii) as may be necessary for the conduct of the business of any communication station or system through which such communication is transmitted or received, or
 - (iii) as may be necessary for the purpose of bringing assistance to any ship, vehicle, aircraft or person if the communication is a distress communication;
- (b) making use of or divulging such communication to any person if it is
 - (i) transmitted by an amateur station, or
 - (ii) addressed to all stations; or
- (c) divulging such communication to
 - (i) a court,
 - (ii) any person or body investigating a marine casualty under the *Canada Shipping Act* or an aircraft accident under the *Air Regulations*, or

(iii) a radio inspector of the Department.

37. The Minister may by notice in writing to a licensee revoke the licence issued in respect of any station where

- (a) there has occurred any breach, non-observance or non-performance by or on the part of the licensee, his servants or agents, of any of the terms or conditions contained in the licence or in these Regulations;
 - (b) the operation of the station has been discontinued for a period of not less than thirty days; or
 - (c) in the opinion of the Minister it is in the national interest to do so;
- and thereupon the powers and authority granted in the licence shall be determined and ended without payment of compensation.

70. (1) Subject to these Regulations, a licence for a station performing a General Radio Service shall expire on the thirty-first day of March three years following the first day of April of the fiscal year in which it is issued.

(2) In this section "fiscal year" means a twelve-month period commencing on the first day of April and ending on the thirty-first day of March following.

(3) In sections 71 to 80 "licensed station" means a station licensed to perform a General Radio Service.

71. A licence for a station performing a General Radio Service may authorize the licensed station to be operated

- (a) in any craft or vehicle;
- (b) at fixed locations; or
- (c) while carried on the person.

72. The frequencies authorized to be used by each licensed station on a shared basis, subject to no protec-

tion from the operation of industrial, scientific and medical apparatus in the frequency band 26.96-27.28 Mc/s, are as follows:

27.005 Mc/s	27.085 Mc/s	27.175 Mc/s
27.015 Mc/s	27.105 Mc/s	27.185 Mc/s
27.025 Mc/s	27.115 Mc/s	27.205 Mc/s
27.035 Mc/s	27.125 Mc/s	27.215 Mc/s
27.055 Mc/s	27.135 Mc/s	27.225 Mc/s
27.065 Mc/s	27.155 Mc/s	
27.075 Mc/s	27.165 Mc/s	

73. (1) A licensed station may carry on two-way radiotelephone communication only with another licensed station that is

- (a) licensed in the name of the same licensee; or
- (b) licensed in the name of a different licensee where the business or personal activities of the licensees concerned are of mutual interest.

(1a) Notwithstanding subsection (1), a licensed station may carry on two-way radiotelephone communication with a station licensed under the *Tourist Radio Service Regulations* to perform a Tourist Radio Service where the personal or private activities of the licensees of the respective stations are of mutual interest.

(2) The type of communication referred to in subsection (1) may include transmissions of signals for the actuation of radio receivers to establish and maintain voice communication.

74. (1) A licensed station shall be used only for communication concerning the business activities and personal affairs of the licensee.

(2) A licensed station shall not be used for any of the following purposes:

- (a) activity contrary to federal or provincial law or municipal by-laws;
- (b) the transmission of music or other material for amusement or entertainment;
- (c) broadcasting or any transmission in connection with broadcasting;
- (d) transmissions of any nature to the public through a public address system;
- (e) transmission of a frivolous nature;
- (f) transmissions directed to any person or station beyond the ground wave coverage range of the station;
- (g) communication used in itself as a diversionary or recreational activity; or
- (h) calls directed to stations generally.

(2a) Notwithstanding paragraph (h) of subsection (2), in an emergency, calls for assistance may be transmitted as a call to "GRS stations" specifying the area concerned.

(3) No tolls shall be levied or collected on account of any business transacted or messages transmitted or received by means of a licensed station.

75. (1) Each exchange of communications between licensed stations shall not exceed five consecutive minutes duration and upon the termination of an exchange of communications no further transmission shall be made until the lapse of two minutes or until interference will not be caused to other stations using the same frequency.

(2) The emission of a carrier wave is prohibited except when actual communications are being transmitted or for making brief test transmissions.

(3) A licensed station shall transmit its assigned call sign

(a) at the beginning and at the end of each exchange of communications in which it is engaged, and

(b) at the end of each test transmission.

76. (1) No transmission by a licensed station shall

(a) cause any interference to any other licensed radio stations operating outside the frequency band 27.00-27.23 Mc/s, or

(b) cause any interference to a private receiving station.

(2) In the event of interference as referred to in subsection (1) being caused by a licensed station, the licensee may be required by a departmental radio inspector to take such steps as are necessary for the prevention of further interference or to restrict or cease operation of the station pending a satisfactory adjustment of the radio apparatus of the station.

77. (1) Each licensee shall be responsible at all times for the control and operation of his licensed station.

(2) Subject to section 10 of the *General Radio Regulations, Part I*, the operator of a licensed station shall be

(a) the licensee of the station; or

(b) any person twelve years of age or over who is a British subject, a United States citizen or a landed immigrant,

and notwithstanding anything in these Regulations, such operator is not required to be the holder of any certificate of proficiency in radio.

(3) Licensed stations are exempt from the radio log requirements of section 36.

78. (1) Stations performing a General Radio Service are authorized to use type A3 and F3 emissions.

(2) The emissions referred to in subsection (1) shall be construed as including the use of tone signals whose

sole function is to actuate receivers to establish and maintain voice communication.

(3) The maximum d.c. power input to the anode or collector circuit of the transmitter amplifier stage supplying radio frequency energy to the antenna shall not exceed five watts or alternatively the r.f. carrier power output shall not exceed three watts.

(4) The carrier frequency of the transmitter shall be maintained within a tolerance of plus or minus .005 per cent of any authorized frequency.

(5) Transmitter emissions necessary for communication shall occupy a bandwidth not exceeding twelve kilocycles.

(6) The r.f. power of transmitter spurious or harmonic outputs shall not exceed thirty microwatts.

(7) The r.f. power measured across the antenna terminals of the radio receiving apparatus used shall not exceed 20,000 picowatts.

(8) The use of radio receiving apparatus employing a super-regenerative circuit is prohibited.

79. For the purpose of complying with section 78, the radio apparatus of a licensed station shall be of a type that has been approved in accordance with the applicable Radio Standards Specifications issued by the Minister, as evidenced by its bearing the departmental type-approval number assigned to such radio apparatus.

80. The provisions of section 14 do not apply with respect to the antenna structure of any station performing a General Radio Service if

(a) the antenna structure is erected between three and six miles distant from the center of a land or water aerodrome,

(i) is on an existing structure and does not exceed twenty feet in height above that structure, or

- (ii) is self-supporting and does not exceed seventy-five feet in height above ground level and does not exceed twenty feet in height above any terrain features or existing structures within a radius of one thousand feet; or
- (b) the antenna structure is erected more than six miles distant from the center of a land or water aerodrome,
 - (i) is on an existing structure and does not exceed thirty feet in height above that structure, or
 - (ii) is self-supporting and does not exceed seventy-five feet in height above ground level and does not exceed thirty feet in height above any terrain features or existing structures within a radius of one thousand feet.

117. Any duly authorized officer of the Department may, from time to time, and at all reasonable times, inspect any radio station or private receiving station within Canada, any apparatus fixed or in use in such station, for the purpose of sending or receiving by radio, and all other telegraphic instruments and apparatus fixed or being in such station, also the working and use of such apparatus and telegraphic instruments, and all books and papers used in connection with the operation of such stations.

1.2 * **Licensing.** With the exceptions noted below all General Radio Service stations must be licensed (R.A. 5. (1)). Licences may be obtained from any Department of Transport Radio Regulations Office.

1.2.1 Licences are normally valid for three years and expire on the 31st of March three years following the 1st of April of the fiscal year in which they are issued (G.R.R.

II 70). For example, a licence issued on April 1, 1967 expires on March 31, 1970; if it were issued on February 25, 1968 it would still expire on March 31, 1970.

1.2.2. The fee for a General Radio Service radio station licence is three dollars (\$3.00) for three years or portion thereof and is payable at the time application is made (G.R.R.I. 4. (2)).

1.2.3 A General Radio Service station licence authorizes the licensee to establish and operate such a station in any vehicle or aircraft or boat registered or licensed in Canada (mobile); at fixed locations within Canada (base); or while carried on the person (walkie-talkie). (G.R.R. II 71). The same unit may be used at one or more of these locations; however, if the licensee uses separate units for the various locations separate licences must be obtained for each unit. For example, if the licensee owns one unit he may use it as a base station and may also move it into his automobile and it is still covered by one licence; however if he uses one unit as a base station and *another* unit in his automobile as a mobile then two licences are required.

1.2.4 Licences are not transferable from one person or company to another. (G.R.R. II 19). In other words you may not "lend" your licence or call sign to anyone. General Radio Service licences may be issued only to persons or companies having the following qualifications:

- (1) British subjects (G.R.R. II 4. (1)).
- (2) Landed immigrants within the meaning of the Immigration Act (G.R.R. II 4. (3) (b) (iv)).
- (3) Companies incorporated under the laws of Canada or any of the provinces thereof (G.R.R. II 4. (1)).

(4) Companies incorporated under the laws of any country of the British Commonwealth, (G.R.R. II 4. (1)).

1.2.4.1 In the case of a licence granted to a landed immigrant it shall not remain in force after the holder thereof has been ordinarily resident in Canada for a period of six years. This time period is normally sufficient for a landed immigrant to have acquired Canadian citizenship and thereby qualify to hold a licence as a British subject (G.R.R. II 4. (3)).

1.2.5 General Radio Service station licences may only be granted to persons over the age of eighteen years (G.R.R. II 5. (2) (b)).

1.2.6 Low-power radiotelephone equipment (walkie-talkies), with a power not exceeding one hundred (100) milliwatts, operating on General Radio Service frequencies are generally exempt from licensing. While no licence is required, they must be used as if they are licensed General Radio Service stations and all the applicable operational rules and regulations must be complied with. (G.R.R. II 6. (3), 6. (3) (a), 6. (4), 6. (5)).

1.2.7 The licence, or a copy thereof, for a radio station must be posted in a conspicuous place in the station. In a base station it will probably be convenient to frame and mount the licence on the wall, or possibly a plasticized photostat could be affixed to the unit. (G.R.R. II 10.).

1.3 **Frequencies.** The frequencies listed below are authorized for use by General Radio Service stations. Since these frequencies coincide with some of the frequencies available to Citizen Band stations in the United States, a comparison of the commonly accepted channel designators is shown. (G.R.R. II 72.).

Frequency in megacycles (Mc/s)	Canadian Channel Designator	U. S. Channel Designator
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27.005	1	4
27.015	2	5
27.025	3	6
27.035	4	7
27.055	5	8
27.065	6	9
27.075	7	10
27.085	8	11
27.105	9	12
27.115	10	13
27.125	11	14
27.135	12	15
27.155	13	16
27.165	14	17
27.175	15	18
27.185	16	19
27.205	17	20
27.215	18	21
27.225	19	22

Use

*1-8
working
- Distance
calling
working*

1.3.1 Transmitting frequencies must be maintained within plus or minus .005% of any authorized frequency. (G.R.R. II 78. (4)).

1.3.2 Each channel is available for use by all licensees; i.e., no recognition is given to any local arrangement which favours the use of a specific channel or channels by a particular user group, such as motels, garages, etc.

1.4 **Radio Equipment.** Only radio equipment which has been type approved by the Department of ~~Transport~~ *Comm* may be used in General Radio Service stations. Home built or "kit" units are not acceptable and cannot be licensed. Any alterations or modifications made to a type approved unit immediately nullifies the type approval. (G.R.R. II 79.).

- 300
- 1.4.1 Each type approved unit must have permanently attached to it a label or other marking bearing the Department of Transport type approval number assigned to such apparatus. A type approval number consists of a series of at least nine figures and is normally shown on the label as "DOT Type Approval No. 109364124". If you are not sure that equipment of your choice is type approved, enquire at the nearest Radio Regulations Office *before* buying it. (G.R.R. II 79.).
- 1.4.2 The permissible types of emissions include amplitude modulation or frequency modulation, employing voice or tone signals. It should be noted however that these types of emission are not compatible with one another; therefore all units of a system must employ the same type of emission. (G.R.R. II 78. (1)).
- 1.4.3 With the exception of tone signals for the activation of selective calling devices, only voice transmissions are permitted in the General Radio Service. The transmission of music, broadcasting, singing or frivolous communications is strictly prohibited. (G.R.R. II 78. (2), 74. (2) (b), 74. (2) (c), 74 (2) (e)).
- 1.4.4 The power of General Radio Service transmitters shall not exceed five (5) watts input to the final amplifier stage, or alternatively shall not exceed three (3) watts output to the antenna. Power amplifiers are not permitted, however there are no restrictions on the type of antenna used. (G.R.R. II 78. (3)).
- 1.5 **Antenna Structures.** Because of possible hazards to aircraft certain restrictions have been placed on the erection of antenna structures in the vicinity of airports and water aerodromes. Under certain conditions antenna masts or towers or other vertical structures may have to be painted and lighted in accordance with specifications approved by the Minister. Normally

- General Radio Service antenna structures are covered by the exemptions outlined below, however, if any doubt occurs enquiries should be made to the nearest Radio Regulations Office. (G.R.R. II 14.).
- 1.5.1 When between three and six miles from an airport, approval is not required if the antenna structure does not exceed (20) feet above an existing building or other structure on which it is mounted, or if it is self-supporting, it does not exceed seventy-five (75) feet above ground level or twenty (20) feet above any terrain features or buildings within one thousand (1000) feet. (G.R.R. II 80. (a)).
- 1.5.2 If the structure is beyond six (6) miles from an airport the height of the structure may not exceed thirty (30) feet under similar conditions. (G.R.R. II 80. (b)).
- 1.6 **Installation and Servicing.** No General Radio Service equipment may be installed or operated until a licence has been granted by the Minister for the same. Actually to be completely "in the clear" you should obtain your licence *before* you purchase your equipment. (R.A. 5. (1)).
- 1.6.1 No radio station, unless of an exempt category; i.e. less than 100 milliwatts power, may be established, installed or operated without being duly licensed. In fact, no person shall have in his possession radio apparatus consisting of a reasonably complete and sufficient combination of radio appliances (receivers, transmitters, power supplies, antennae, etc.) intended for or capable of being used as a radio station except under authority of a radio station licence. (R. A. 5(1)).
- 1.6.1.1 Any unlicensed radio equipment (as referred to above) may be seized by a Radio Inspector and the owner upon summary conviction is liable to a fine of up to fifty dollars (\$50.00) and costs and on conviction by

indictment to a fine of up to five hundred dollars (\$500.00) and to imprisonment for a term of up to twelve (12) months. Also upon conviction the radio equipment to which the offence relates may be forfeited to Her Majesty. (R. A. 10. (1)).

- 1.6.1.2 Remember, your GRS licence permits operation of your station only within the GRS band (i.e. on Canadian channels); operation outside the band (such as on U.S. Citizen Band channels 1, 2, 3 and 23) is not authorized and could result in the penalties stated in 1.6.1.1. above. (R.A. 10 (1)).
- 1.6.2 Any person who installs, places in operation, repairs or maintains any unlicensed equipment either for himself or on behalf of another person is guilty of an offence. (G.R.R. II 13.). The onus is on the person doing the installation or repairs to satisfy himself that the equipment is properly licensed.
- 1.6.3 Any modification to the components or internal wiring of a General Radio Service unit of equipment immediately nullifies its type approval thus making it unlicensable. (G. R. R. 79)
- 1.6.4 Repairs to equipment so long as defective parts are replaced by electrically identical parts without modification or change to the wiring are not normally considered as modifications and do not affect the type approval of the unit concerned.
- 1.6.5 The addition of "out-board" units, such as signal strength ("S") meters is permitted provided appropriate connections have been provided in the design and manufacture of the unit. "Home-brew" attachments, even though made by professional maintenance and repair personnel, would constitute modifications, and are therefore unacceptable.

1.7 **Inspection of Stations.** A Radio Inspector or any other authorized officer of the Department of Transport may inspect any radio station at all reasonable times. Such an inspection may cover not only the equipment and antenna, but also all other associated apparatus, record books and other papers concerning the operation of the station. (G.R.R. II 117.).

- 1.7.1 It is not necessary for a Radio Inspector to give prior notice of his intention to inspect a station, therefore it behooves all licensees to maintain and operate their stations at all times in a manner in which they would like it to be seen.
- 1.7.2 Every Radio Inspector carries a "Card of Authority" bearing his photograph and signature, which he will produce on request for identification, if he is not known to the licensee.
- 1.7.3 "On-the-air" Inspections by Departmental monitoring stations and other offices are carried out periodically. If a station is found to be operating improperly (off-frequency, over-modulating, using incorrect operating procedures such as improper identification or excessive calling, unauthorized types of communications, exceeding the five minute communication time limit, etc.) a notice entitled "Report of an Irregularity or of an Infringement of the Telecommunications Convention or of the Radio Regulations" will be sent to the licensee of the station involved. This report is intended as a warning that the station is not being operated within the terms of its licence and that immediate steps should be taken to correct the faulty operation. Disregard of the warning and continued improper operation will lead to further investigations and possible suspension or revocation of the station licence. (G.R.R. II 37.).

- 1.8 **Secrecy of Communications.** All persons who become acquainted with any radio communication are bound to preserve the secrecy of such correspondence. No person shall divulge the contents, or even the existence, of correspondence transmitted, received or intercepted by radio, except to the addressee of the message or his accredited agent, or to properly authorized officials of the Government of Canada (including Radio Inspectors) or a duly constituted legal tribunal, or to an operator of a telecommunications system as is necessary for the furtherance or delivery of the communication. (R.A. 8. (2), G.R.R. II 35.).
- 1.8.1 No person may make use of any information of which he has become aware through the reception or interception of any radiocommunication which is not addressed to or intended for him. (R.A. 8. (2)).
- 1.8.2 Licensees of General Radio Service stations should take care when installing their stations that they are not so located that members of the general public or other unauthorized persons can overhear communications not addressed to the station concerned, since this can be considered as the divulging of such communication to other persons.
- 1.8.3 Users of General Radio Service stations should be very careful not to discuss who or what they hear since they might be inadvertently contravening the secrecy legislation.
- 1.8.4 The foregoing restrictions do not, of course, apply to transmissions from sound broadcasting or television stations. (G.R.R. II 35. (a)).
- 1.8.5 Any person who violates the secrecy regulations is liable, on summary conviction to a penalty not exceeding five hundred dollars (\$500.00) or to imprison-

ment for a term not exceeding six months or to both fine and imprisonment. (R.A. 8. (2)).

1.9 **Communications.**

- 1.9.1 **Who.** A General Radio Service station may be operated by the licensee or, with his permission, any person who is twelve years of age or over and is a British subject, a United States citizen, or a landed immigrant. A radio operator certificate is not required. (G.R.R. II 77. (2)).
- 1.9.1.1 No matter who is actually using or operating a General Radio Service station, the licensee of the station is responsible at all times for the manner in which it is operated and for what is transmitted by it. (G.R.R. II 77. (1)).
- 1.9.2 **With Whom.** A General Radio Service station may be used to carry on a two-way radiotelephone conversation with:
- (1) another General Radio Service station licensed in the name of the same licensee. (G.R.R. II 73. (1) (a)).
 - (2) another General Radio Service station licensed in the name of a different licensee, provided their business activities or personal affairs are of mutual interest. (G.R.R. II 73. (1) (b)).
 - (3) A Tourist Radio Service station (a U.S. Citizen Band station authorized to operate in Canada) provided the personal activities of the licensees are of mutual interest. (G.R.R. II 73. (1a)).
 - (4) a low-power (less than 100 milliwatts) station operating on GRS frequencies which is not required to be licensed provided the provisions of 1), 2) and 3) above are met. (G. R.R. II 6. (3), 6. (3a)).

1.9.2.1 Transmissions shall not be directed to or exchanged with persons or stations beyond the ground wave coverage of the station. Ground wave coverage for a General Radio Service station is normally about the same as "line of sight" which, with the types of antennae generally employed, will not exceed twenty-five (25) to thirty (30) miles. (G. R.R. II 74. (2) (f)).

1.9.2.2 Since U.S. Citizens Band stations, while using some of the same frequencies, are *not* General Radio Service stations, communication with such stations is *not* permitted. Even though other parameters may be met (i.e. common businesses or interests of the licensees, within ground wave coverage, common frequency, etc.) communication with stations outside of Canada is not permitted, nor may General Radio Service stations be used outside Canada.

1.9.2.3 Tourist Radio Service stations may be recognized by their call signs which consist of their U.S. Citizen Band call sign followed by the letters "XM".

1.9.3 **What.** As stated above the General Radio Service is intended to provide for business or personal two-way communications. (G.R.R. II 74. (1). For example: a despatching service for a small parcel delivery or taxi company; between husband and wife to pick up some groceries on the way home from office; between a summer cottage and boat on the adjoining lake; between a traveller on a highway and a motel operator concerning accommodation, or to a garage for road service, etc.

1.9.3.1 The General Radio Service shall *not* be used for:

- (a) any activity which is contrary to any federal or provincial law or municipal by-law;

- (b) the transmission of music or any other material for amusement or entertainment, (be careful that the program from a nearby radio or television receiver is not picked up and re-transmitted by your transmitter);

- (c) program material or other information for transmission in connection with broadcasting. (If GRS is used for news or sports reporting between a field site and the studio the transmission must not be directly fed into the broadcast transmission; the material must first be edited and preferably respoken into the studio microphone).

- (d) transmissions of any nature to the public through a public address system. (GRS must not be used as a relay link between the microphone and the loud speakers of a public address system);

- (e) transmissions of a frivolous nature. (Don't tell jokes or stories);

- (f) transmissions directed to persons or stations beyond the ground wave coverage range of the station (see para. 1.9.2.1 for details);

- (g) communication used in itself as a diversionary or recreational activity. (GRS is a business communication service, it is not intended as a toy or an amusement; don't talk about the weather, unless you and your correspondent are meteorologists, don't talk about your equipment or the stations you have worked or heard);

- (h) general calls to "all stations"; calls may however, if necessary, be made to "GRS stations" specifying a specific area or locality; i.e. a motorist desiring assistance might call "any GRS in Townsville". (G.R.R. II 74.(2)).

1.9.3.2 Profane and offensive language is strictly prohibited. (G.R.R. II 27. (3)).

1.9.4 **When.** There are no limitations on when a General Radio Service station may be operated provided interference is not caused to any licensed radio station operating on other than GRS frequencies or to the reception of broadcasting and television signals. In the event of such interference the licensee may be required by a Radio Inspector to restrict the operation of his station to specific times or to cease operation entirely until appropriate measures have been taken by the licensee to so adjust his equipment as to prevent further interference. (G.R.R. II 26, 76. (1), 76. (2)).

1.9.4.1 No exchange of communications between General Radio Service stations shall exceed five (5) consecutive minutes. At the end of five (5) minutes both stations shall cease transmitting for at least two (2) minutes or until interference will not be caused to other stations using the same frequency. (G.R.R. II 75. (1)).

1.9.4.2 The emission of an unmodulated carrier is prohibited, except when necessary for making brief test transmissions. (Do not idly press or play with the microphone switch while waiting to make a call, you may be putting your carrier on the air and interfering with communications in progress). (G.R.R. II 27. -(1), 27. (2), 75. (2)).

1.9.5 **Identification.** Each licensed General Radio Service station is assigned a call sign. All GRS call signs commence with the letters XM, followed by five or six figures; the first two figures indicate the Department of Transport office issuing the licence.

1.9.5.1 Each licensed General Radio Service station shall transmit its full assigned call sign at the beginning and

at the end of each exchange of communications and at the end of each test transmission. (G.R.R. II 30, 75. (3)). For your own protection do not abbreviate your call sign when using it under the above circumstances. If you are proud of your station and its operation there is no need to hide its identity! More on the correct use of call signs will be found under the Procedures chapter which follows.

Chapter 2 — Procedures

2. **PROCEDURES.** If efficient and effective radiotelephone communication is to be achieved a few simple and straightforward rules must be followed. Briefly they are:

- (1) Listen before transmitting. Don't interfere with communications already in progress.
- (2) Be courteous. Treat others as you would have them treat you.
- (3) Don't use your transmitter unless it is really necessary.
- (4) Speak clearly. Don't use unnecessary abbreviations or codes.

2.1 **Transmitting Techniques.** The efficient use of radiotelephony depends very greatly on the method of speaking and the articulation of the user. Since the distinctive sounds of consonants are liable to become blurred in the transmission of speech and since words of similar vocal length containing the same vowel sounds are apt to sound alike (e.g. "best", "rest", "test", "pressed") special care is necessary in their pronunciation.

2.1.1 Speak all words plainly and each word clearly so as to prevent the slurring or running together of consecutive words.

2.1.2 Speak in a normal conversational manner. Avoid any tendency to shout or accent syllables artificially. Do not talk too rapidly.

2.1.3 The following points should be kept in mind when using radiotelephony:

SPEED— Keep the rate of utterance constant, neither too fast nor too slow. If the recipient has to write down your message adjust your speed of speech accordingly.

PITCH— Remember that high pitched voices transmit better than low pitched voices. Don't mumble.

RHYTHM— Preserve the rhythm of ordinary conversation. In separating words so that they are not run together, avoid the introduction of sounds that do not belong, such as "er" and "um".

MICROPHONE POSITION — At all times maintain the correct position between the mouth and the microphone for the type of microphone being used. Usually the lips of the speaker should not be more than one inch away from the microphone.

2.2 **Word Spelling.** At times, when communications become difficult because of interference or poor reception conditions, it becomes necessary to spell out certain words. Normally the individual letters are given their own common pronunciation, but this is not always satisfactory, and in order to further assist in understanding the message, letters are given individual names. The names in the list below have been developed after many years of study and trial by international language and communication experts and are equally effective in English, French and Spanish.

A — ALFA	J — JULIET	S — SIERRA
B — BRAVO	K — KILO	T — TANGO
C — CHARLIE	L — LIMA	U — UNIFORM
D — DELTA	M — MIKE	V — VICTOR
E — ECHO	N — NOVEMBER	W — WHISKEY
F — FOXTROT	O — OSCAR	X — X-RAY
G — GOLF	P — PAPA	Y — YANKEE
H — HOTEL	Q — QUEBEC	Z — ZULU
I — INDIA	R — ROMEO	

Example:

When using the above spelling alphabet, the word "EUREKA" would be spoken as "ECHO, UNIFORM, ROMEO, ECHO, KILO, ALFA".

2.3 **Transmission of Numbers.** In radiotelephony communications, to avoid misunderstanding, all numbers except whole thousands are transmitted by pronouncing each digit separately. Whole thousands are transmitted by pronouncing each digit in the number of thousands followed by the word "thousand".

Examples:

Number	Transmitted as
10	One zero
75	Seven five
100	One zero zero
583	Five eight three
5000	Five thousand
5800	Five eight zero zero
11000	One one thousand
25000	Two five thousand
38143	Three eight one four three

2.3.1 Numbers containing a decimal point are transmitted as prescribed in paragraph 2.3 with the decimal point in the appropriate place being indicated by the word "decimal".

Example:

Number	Transmitted as
118.1	One one eight decimal one

2.4 **Abbreviations:** While abbreviations and codes may at first appear to speed up and shorten transmissions, this is not always the case; they only tend to introduce unnecessary misinterpretations and misunderstandings which require repetition of the transmission to ensure accuracy, and this all takes more time on the air. Codes are at times necessary to help preserve the secrecy of correspondence but are not conducive to accuracy. If they are used, care must be taken to apply them accurately and not to "stretch" their meanings. For example, the code "Ten Four" used by law enforcement agencies means "Message Received", not "OK", "I agree", "I have received all your last transmission", etc.

2.5 **Procedure Words and Phrases.** While we have just warned against the indiscriminate use of abbreviations, there are certain terms normally referred to as "Procedure Words" or "Procedure Phrases" which if properly used can prove very helpful in obtaining efficient communications. The more useful of these words and phrases for GRS users are shown below.

Word or Phrase	Meaning
ACKNOWLEDGE	Let me know that you have received and understood this message.
AFFIRMATIVE	Yes, or Permission granted.
CONFIRM	My version is , is that correct?
CORRECTION	An error has been made in this transmission (or message indicated). Correct version is
GO AHEAD	Proceed with your message.
HOW DO YOU READ	Self-explanatory
ISAY AGAIN	Self-explanatory

Word or Phrase	Meaning
NEGATIVE	No, or Permission not granted, or that is not correct, or I do not agree.
OVER	My transmission is ended and I expect a response from you.
OUT	This conversation is ended and no response is expected.
READ BACK	Repeat all of this message to me exactly as received, after I have given over.
ROGER	I have received all of your last transmission.
SAY AGAIN	Repeat all, or the following part, of your last transmission.
SPEAK SLOWER	Self-explanatory
STANDBY	Self-explanatory
THAT IS CORRECT	Self-explanatory
WILCO	Your instructions received, understood and will be complied with.

Note: Do not make the common error of saying "OVER AND OUT", the two terms contradict each other; "OUT" is only used at the termination of a contact or conversation.

2.6 **Calling.** Before transmitting, the operator of every station shall listen for a period long enough to satisfy himself that he will not cause harmful interference to transmissions already in progress. If such interference seems likely, he shall await the termination of, or the first break in, the transmission with which he might interfere.

2.6.1 A call between two stations consists of:
(1) the full call sign of the station being called.
(2) the words THIS IS

- (3) the full call sign of the station calling, and
- (4) the word OVER.

Example:

XM FOUR TWO ZERO FIVE THREE ZERO,
THIS IS XM FOUR TWO ONE ONE THREE
EIGHT, OVER

Do not make the mistake of stating your own call sign first.

- 2.6.2 As mentioned in Paragraph 1.9.3.1 (h) general calls to "All stations" are not permitted, however, if necessary, a call may be made to "any GRS station" in a specific location.

Example:

"ANY GRS STATION IN TOWNSVILLE,
THIS IS XM FIVE THREE ZERO NINE
SEVEN ONE, OVER".

Such a call could be used by a motorist requiring assistance on the highway; it must not be used just to see who is "on-the-air".

- 2.7 **Replying.** An operator hearing a call directed to his station shall reply as soon as possible, and advise the calling station to proceed with his message, or if he is unable to accept the transmission at the time, request the calling station to "standby". Don't just ignore the call; it only results in unnecessary calling by the calling station, thus using up air time which is probably needed by other stations.

- 2.7.1 A reply to a call consists of:
- (1) the full call sign of the station calling,
 - (2) the words THIS IS,
 - (3) the full call sign of the station replying, and

- (4) the word OVER or GO AHEAD or STANDBY, as appropriate.

Example:

XM FOUR TWO ONE ONE THREE EIGHT,
THIS IS XM FOUR TWO ZERO FIVE THREE
ZERO, GO AHEAD.

- 2.7.2 If an operator hears a call addressed to his station but is not certain of the identity of the calling station, the reply should take the following form:

- (1) the words THIS IS,
- (2) the full call sign of the station replying,
- (3) the words SAY AGAIN YOUR CALL SIGN, and
- (4) the word OVER or GO AHEAD

Example:

THIS IS XM FOUR TWO ZERO FIVE THREE
ZERO, SAY AGAIN YOUR CALL SIGN, OVER.

- 2.7.3 After communication has been established and when no confusion is likely to arise, a shortened form of procedure may be used by omitting such words as THIS IS, OVER, etc.

- 2.8 **Termination of Contact.** When a contact or conversation is finished each station shall transmit its own full call sign and the word OUT.

Example:

XM FOUR TWO ZERO FIVE THREE ZERO,
OUT.
XM FOUR TWO ONE ONE THREE EIGHT,
OUT.

2.9 **Test.** On-the-air tests of General Radio Service transmitters should seldom be necessary. When they are necessary they should be short (not more than ten (10) seconds) and special care shall be taken not to interfere with actual communications.

2.9.1 A test transmission should consist of spoken numerals (ONE, TWO, THREE, FOUR, etc.) followed by full call sign of station making the test.

Example:

TEST, ONE, TWO, THREE, FOUR, THIS IS
XM THREE ONE ZERO ONE NINE SEVEN
FOUR, OUT.

2.9.2 In radiotelephony communications the readability of signals is usually referred to in accordance with the following scale. It should be remembered that readability is not synonymous with loudness; a loud signal can be completely unreadable, while a comparatively weak signal without interference can be perfectly readable and understandable.

- 1 — Unreadable
- 2 — Readable now and then
- 3 — Readable but with difficulty
- 4 — Readable
- 5 — Perfectly readable.

Example:

YOUR SIGNALS READABILITY THREE.

2.10 **Log Keeping.** General Radio Service stations are exempt from keeping a station log or record of station activities. (G.R.R. II 77. (3)). However, a well kept log is an asset to the operations of any radio station

and can be the best form of protection in case of interference complaints incorrectly laid against your station. If you decide to keep a log it must be complete and be kept at all times, with all calls and communications being recorded.

2.10.1 A log when kept should contain at least the following elements:

- (1) Date and time,
- (2) Call sign of station called or communicated with,
- (3) Frequency (or channel) used.

Additionally the duration (or time of ending) of the conversation together with a brief description of the information passed could be recorded.

2.11 **Time.** Normally all references to time employed in radio communications are made in Greenwich Mean Time (GMT) usually referred to as "Z" Time. GMT is the time for the zero meridian which passes through Greenwich, England, and is the time standard for the world. GMT has the following relationship with the standard time zones in Canada.

Newfoundland Standard Time (NST) is 3½ hours behind GMT.

Atlantic Standard Time (AST) is 4 hours behind GMT.

Eastern Standard Time (EST) is 5 hours behind GMT.

Central Standard Time (CST) is 6 hours behind GMT.

Mountain Standard Time (MST) is 7 hours behind GMT.

Pacific Standard Time (PST) is 8 hours behind GMT.

Yukon Standard Time (YST) is 9 hours behind GMT.

- 2.11.1 A time conversion chart will be found below.
- 2.11.2 GMT uses the 24-hour system of stating time in four figures, the first two figures representing the hour and last two the minutes past the hour.

Example:

12:45 AM is expressed as 0045
 12:00 (noon) is expressed as 1200
 12:45 PM is expressed as 1245
 12:00 (midnight) is expressed as 2400 or 0000
 1:30 AM is expressed as 0130
 1:45 PM is expressed as 1345
 4:30 PM is expressed as 1630

- 2.11.3 Daylight Saving Time is not used in radio communications.

TIME CONVERSION TABLE (STANDARD TIMES)

Greenwich Time (Z)	Newfoundland	Atlantic	Eastern	Central	Mountain	Pacific
0100	2130	2100	2000	1900	1800	1700
0200	2230	2200	2100	2000	1900	1800
0300	2330	2300	2200	2100	2000	1900
0400	0030	2400	2300	2200	2100	2000
0500	0130	0100	2400	2300	2200	2100
0600	0230	0200	0100	2400	2300	2200
0700	0330	0300	0200	0100	2400	2300

0800	0430	0400	0300	0200	0100	2400
0900	0530	0500	0400	0300	0200	0100
1000	0630	0600	0500	0400	0300	0200
1100	0730	0700	0600	0500	0400	0300
1200	0830	0800	0700	0600	0500	0400
1300	0930	0900	0800	0700	0600	0500
1400	1030	1000	0900	0800	0700	0600
1500	1130	1100	1000	0900	0800	0700
1600	1230	1200	1100	1000	0900	0800
1700	1330	1300	1200	1100	1000	0900
1800	1430	1400	1300	1200	1100	1000
1900	1530	1500	1400	1300	1200	1100
2000	1630	1600	1500	1400	1300	1200
2100	1730	1700	1600	1500	1400	1300
2200	1830	1800	1700	1600	1500	1400
2300	1930	1900	1800	1700	1600	1500
2400	2030	2000	1900	1800	1700	1600