



Government of Canada
Department of Communications

Gouvernement du Canada
Ministère des Communications

POLICY MANUAL

PM - 1 **RADIO LICENSING**

PART 1

GENERAL

THIRD EDITION
AUGUST 1, 1985

TELECOMMUNICATION REGULATORY SERVICE

Notice to Users

This edition of the manuals, has been produced on a computer in preparation for possible future on-line access and to take advantage of computer text editing utilities. The structure has been altered to facilitate computer generation of paragraph numbers, titles and illustration numbers. Computer generated alphabetic and frequency indexes have also been introduced.

There were no amendments made to the contents of this edition except the elimination of outdated sections. Subsequent revisions will contain appropriate amendments. In addition, subject to the availability of resources, we will be undertaking a project to revise the content of the various sections of the Manuals. Consequently, if you have any suggested revisions or if you detect errors, please report these to DOS-P via the proper channels.

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RADIO LICENSING - GENERAL

1. Introduction

This part deals with the broad aspects of radio licensing.

2. Eligibility

Applicants must meet the following requirements:

2.1. Age of Licensee

Section 5 of the General Radio Regulations, Part I, states, in part, that:

- (2) Subject to subsection (3), no station licence shall be issued to an individual who is under the age of sixteen years.
- (3) A station licence may be issued
 - (a) for a station performing a General Radio Service for model control operation only, to any person who is not less than twelve years of age; or
 - (b) for a station performing an Amateur Service to any person holding a radio operator's certificate referred to in Section 48 of the General Radio Regulations, Part II.

2.2. Persons Who May Hold Licences

Any person who complies with the respective terms and conditions of paragraph 5(1)(a), (d), (e), (f) and (g) of General Radio Regulations, Part I is eligible for radio station licences.

3. Suspension or Revocation

Paragraph 4 (d) of the Radio Act provides that the Minister may subject to certain conditions, suspend or revoke any licence or certificate where he is satisfied that the holder thereof has wilfully failed to operate the radio station or radio apparatus in respect of which the licence or certificate was issued in accordance with the regulations or the conditions of his licence or certificate or that the licence or certificate was obtained by fraud.

3.1. Notice and Hearing

Subsection 4(2) of the Radio Act provides that no licence or technical construction and operating certificate shall be revoked or suspended under this section

- a) except with the consent of the holder thereof;
or
- b) in any other case, unless notice of intention to suspend or revoke the licence or certificate has been given to the holder and he has been given a reasonable opportunity to be heard.

4. Coordination zone U.S./Canada

Radio stations located within the areas defined in Appendix A are located within the United States/Canada coordination zone. It was agreed that prior to authorizing any station within this zone, the Administration of the other country will be advised and their comments considered. The coordination zone was established to help prevent harmful interference between Canadian and American radio stations.

5. U.S.-Canada Operation

Under the terms of a Convention between Canada and the United States dated March 15, 1952, certain mobile radio stations licensed by either country may, upon application, be authorized to operate in the other country. Canadian licensees should obtain application forms from the Federal Communications Commission, Washington, D.C.

Radio stations of one country when operating within the borders of the other country, are subject to the Radio Regulations of the country in which the operation takes place.

5.1. Aircraft Pilots

Canadian and American aircraft pilots who are the holders of radio operators certificates issued by their respective countries may operate radio equipment on aircraft in the other country without obtaining additional authority.

5.2. Land Mobile

Land mobile radio stations properly authorized in one country may be operated in accordance with the Canada/U.S. Agreement mentioned above, subject to local operating conditions and regulations. This applies to:

- 1) Mobile radio units installed in
 - a) police, fire and other public safety vehicles,
 - b) vehicles engaged in the operation or maintenance of a pipe line or other industrial facility extending across the border,
 - c) vehicles regularly engaged in the public carriage of goods or persons between the two countries; and
- 2) Mobile radio units which are limited to communication through common carrier radiocommunication companies or agencies.

5.3. Radio Amateurs

Amateur operation under the Convention in question is more fully covered in PM-1-8.

5.4. Reciprocal Agreement GRS and CB

Under the terms of the Canada/United States reciprocal agreement dated November 19, 1969 the licensee of a station in the Canadian General Radio Service may operate his equipment while visiting the United States and a licensee of a station in the United States Citizens Band (CB) Radio Service may operate his station while visiting in Canada.

5.5. Administrative Agreement Model Control

An administrative agreement has been concluded with the United States respecting the operation of radio equipment for the remote control of models on a reciprocal basis. Pending an amendment to the Canada/U.S. agreement the following guidelines apply:

"Licensees of stations in the U.S. Radio Control (R/C) Service may operate their model control equipment in Canada under the auspices of a Canadian General Radio Service licensee. Compliance with the Canadian requirements is a responsibility of the model equipment operator. Canadians are afforded similar privileges in the U.S.A."

5.6. Registration Procedure

The procedure used for registration of mobile stations under the Reciprocal Agreement of 1952 has been extended to cover the GRS/CB Agreement of 1969.

5.7. Documents, Treaties and Agreements

In order to be familiar with the terms of the Conventions described above, the following documents should be on hand in all regional and district offices:

5.7.1. Agreement 1952

Treaty Series 1952, No. 7 "Radio Convention between Canada and the United States of America" (commonly referred to as the "Reciprocal Agreement"); and

5.7.2. Radiotelephone Agreement GRS/CB

"Agreement between the Government of Canada and the Government of the United States of America Relating to the Operation of Radiotelephone Stations".

5.8. Amateur Registration Permits

A working arrangement has been concluded between the F.C.C. and D.O.C. to the effect that registration permits will not be required after January 21, 1980, for visiting amateurs who intend to temporarily operate their stations while in the other country (regulations to be amended).

6. Canadian Frequency Allocations

The Canadian Table of Frequency Allocations based on the International Table (World Administrative Radio Conference, 1979) allocates the electromagnetic spectrum between 9 kHz and 275 GHz.

7. Frequency Planning

The Band 890 MHz - 10 GHz is presently under review and further policy concerning the utilization of this band will be released in the near future. Following the 890 - 10 GHz review, development of the 10 - 30 GHz band will commence.

8. Radio Standards Procedure 100

This document, entitled Certification Procedure cancels and replaces RSP100, RSP103, and RSP104. It provides, in one document, for the certification of radio equipment in both major categories, those granted type-approval under a relevant RSS, and those granted technical acceptability where no relevant RSS is in effect. The present structure of the Radio Equipment List will be maintained.

9. Technical Adjustments

Notwithstanding the fact that particular stations are already licensed, the Department may require the licensee to make adjustments where the equipment in these stations causes interference within the meaning of the Radio Act and Regulations.

10. Radio Standards Procedure 101

The intent of Radio Standards Procedure 101 is to advise applicants of the information required by the Department in licensing radio stations to be used for single or multiple-hop radio links operating on frequencies between 30 MHz and 40,000 MHz.

10.1. Intent

Radio Standards Procedure 101 is divided into two parts

Part 1 - Describes the application procedures for radio link(s) to be established in the fixed service bands between 30 MHz and 40,000 MHz; and

Part 2 - Details the technical particulars to be included in submissions or engineering brief filed in support of simple radio link systems in the VHF/UHF bands. There are separate sections for the fixed service, the mobile services and the maritime mobile service on ITU Appendix 18 VHF frequencies.

10.2. Standards

The Department will assess the information submitted under RSP101 to determine the technical suitability of the radio system. The standards applied to the radio links will be obtained, as appropriate, from Radio Standards Procedures, Radio Standards Specifications and Standard Radio System Plans.

11. Engineering Brief

Applicants must also submit a detailed engineering brief so that the Department may determine if the facility meets its technical performance standards. Prior to the granting of the licences the Department will not consider itself bound by financial or commercial commitments made by the applicant.

12. Economic-Commercial Brief

Under this system approach, applicants for licences will be required to submit a detailed economic-commercial brief to assist the Department to assess the proposed application.

13. Planning and Consultation

Licensees shall cooperate with prospective applicants by providing technical information to assist in the planning of new communication facilities to ensure the effective use and orderly sharing of the frequency spectrum. Where cooperation is not extended in the consultation process the Department may intercede on behalf of applicants.

14. Retention of Information

Information furnished in support of a submission will be retained by the Department. It will be treated as Trade Confidential if so requested, and will not be released without written permission.

15. Radio Standards Procedure 113

This document outlines the procedures to be followed to obtain a licence from the Minister of Communications, for point-to-point radio systems in the Terrestrial Fixed Service operating above 890 MHz.

16. Radio Standards Procedure 114

Radio Standards Procedure 114 outlines the procedures to be followed by applicants eligible to own and operate space stations and earth stations of all kinds, except for Receive-only (TVRO) earth stations covered under RSP-116.

17. Radio Standards Procedure 116

Radio Standards Procedure 116 addresses the procedures to be followed by an operator or owner of a facility when applying for a licence for a TVRO earth station from the Minister of Communications.

18. Summary of Minister's Responsibilities

The above procedures reflect, in part, the following major responsibilities of the Minister of the Department of Communications:

- a) To optimize the utilization of the radio frequency spectrum, and the geostationary satellite orbit;
- b) To provide for the planning of the efficient and orderly growth of the Canadian radio telecommunications network as an entire system;
- c) To ensure that the public interest is served through the consideration of all relevant factors in the granting of licences for new radio transmission facilities;
- d) To anticipate, analyse and resolve interference problems in the early stages of system development;
- e) To consider future system expansion plans and provide for frequency protection to the extent possible; and
- f) To ensure that Canadian radiocommunication systems conform to the provisions of the Radio Act which reflects Canadian agreement to the International Radio Regulations established by the International Telecommunications Union.

19. Microwave Systems above 890 MHz

Technical guidelines, licensing policy, frequency planning and procedures have been developed and are currently in use by microwave systems operating above 890 MHz.

19.1. Microwave Licensing Procedures and Criteria

A Network Development document entitled "Microwave Licensing Procedures and Criteria for Use in Conjunction with Radio Standards Procedure 113" outlines delegation of responsibility to Regions and summarizes RD/DGTN procedures for handling microwave applications.

19.2. A Plan for Departmental Microwave Operations

A document entitled "A Plan for Departmental Microwave Operations" reinforces the existing plan for handling microwave applications as joint undertakings between Headquarters (DGTR/DGTN) and the Regions.

19.2.1. Standard Radio System Plans (SRSP)

"Standard Radio System Plans" (SRSP) are documents which state the technical requirements and radio frequency channel arrangements for line-of-sight radio relay systems (Ref. PM-1-5). Guidelines have been developed in certain bands for which SRSP's have not been developed.

19.2.2. Standard Practices for Technical Evaluation

Four "Standard Practices for Technical Evaluation of Microwave Systems" have been issued

- a) "Standard Practice for the Technical Evaluation of Microwave Radio Relay Proposals" (SPTe-1) designates those studies that must be performed to complete the technical evaluation of microwave radio relay system proposals;
- b) Procedure for the Completion of the Microwave System Evaluation Input Form (SPTe-2) is an aid in completing the computer input form for carrying out an EMC analysis, for each proposed microwave system, using the Microwave Analysis System (MAS);
- c) Standard Practice for Technical Requirements for Canada/United States Microwave Frequency Coordination (SPTe-3); and
- d) "Standard Practice for Technical Evaluation of Non-Standard Microwave Proposals" (SPTe-4).

This document deals with proposals in an application for a microwave system or changes to an existing system which do not meet the minimum technical requirements of our Standard Radio Systems Plans.

19.3. Licensing Policy 7125-7725 MHz and 7725-8275 MHz

Radio licensing policy for fixed services in the bands 7125-7725 MHz and 7725-8275 MHz have been developed to provide guidance and permit the orderly growth and development of radio systems in these bands. SRSP, 305 and 306 should be read in conjunction with this policy.

19.3.1. Letter-of-Understanding

A Letter-of-Understanding was issued by the Department at the request of the Canadian Electrical Association clarifying certain technical points in Standard Radio Systems Plans 305 and 306 mentioned above.

19.4. 12.7-12.95 GHz Technical Guidelines & Licensing Policy

Technical guidelines and radio licensing policy are available for short-haul microwave systems in the bands 12.7-12.95 GHz. Systems operating in this band must normally have the following features:

- a) The capacity is limited to a maximum of approximately 20 or 40 television channels or their equivalent, depending on the type of modulation used, and a minimum of four television channels or their equivalent; and
- b) The range is one-hop and limited to approximately 32 km. A passive repeater will not be considered to be a repeater, in the context of the number of hops, but any proposal to use such a reflector in a system will be assessed on the basis of potential coordination problems.

In light of the uncertainties surrounding the future development of systems in the 12.7-12.95 GHz band, the Department intends to review this policy in conjunction with the 10-30 GHz review.

19.5. Standard Radio System Plan 312

SRSP 312 (presently an internal working document) covers the technical requirements for line-of-sight, point-to-point radio systems between 14.5-15.35 GHz.

19.5.1. 14.5-15.35 GHz Band

Radio licensing policy is provided for short haul microwave systems in the band 14.5-15.35 GHz. The Department intends to review this policy as some of the subjects to be considered may indicate a need for extended systems in rural areas and from metropolitan to rural areas.

19.5.2. 14.5-14.75 GHz Band

For planning purposes, the 14.5-14.75 GHz band is divided into four sub-bands, and technical guidelines for very high capacity microwave (VHCM) CATV distribution systems operating in the 14.5-14.75 GHz portion of the band have been developed.

20. Tolerances, Domestic and International

There are two aspects of the question of tolerances: the international and the domestic. Internationally, the minimum standards contained in the Geneva Radio Regulations are designed to mitigate the effects of radio emissions of one country upon another. However, domestically, many countries find it necessary to establish tighter standards than those of I.T.U. because they are concerned with internal problems, as well as efficient use of the radio spectrum.

20.1. ITU Tolerances

The ITU Radio Regulations provide that transmitting stations shall conform to the frequency tolerances and levels of spurious emissions contained in Appendices to those Regulations. The Appendices set the end dates after which all transmitters must comply with the values listed therein.

20.2. Application in Canada

In Canada, spectrum congestion has made it necessary to require transmitting stations to meet stability requirements generally more stringent than those specified by the I.T.U. These special domestic requirements have been recognized in the various Radio Standards Specifications and Broadcast Specifications issued to date.

20.2.1. Recognized Standards

Considering that Canadian monitoring stations are concerned generally with the observation and measurement of all classes of radio stations operating throughout the radio spectrum, it has been decided that the frequency tolerances contained in the International Radio Regulations should be used as a guide with respect to such stations in Canada and abroad, operating within these bands. Where a Canadian station actually causes interference while complying with the I.T.U. Regulations and it is found that the interference is due to inadequate frequency stability, the responsible Regional office should require the licensee to meet the more stringent frequency stability requirements of any Radio Standard Specification applicable to the particular Service.

21. Geo-stationary Orbital Protection

When considering applications for line-of-site radio-relay systems sharing frequency bands with the fixed satellite service, the following general principles apply to ensure geo-stationary orbital protection.

21.1. Canadian General Principles

The Department of Communications, in its objective to ensure orderly evolution of communications networks in Canada and in accordance with internationally adopted regulations, has been discouraging applicants from planning to overbuild radio-relay stations on "existing routes" whenever the antennas of such systems point within two degrees of the geostationary orbit.

21.2. Limits for E.I.R.P. and Transmitting Antennas

CCIR Recommendation 406-3, in addition to defining terms such as existing route for the line-of-sight radio-relay systems, recommends internationally adopted approaches such as limits on the maximum values of equivalent isotropically radiated power (e.i.r.p.) for each transmitter in order to resolve sharing problems with the fixed satellite service. This recommendation to be followed since it will probably form the basis for new international Radio Regulations. Thus, if it is absolutely necessary to overbuild on an existing route where there is an intercept with the geostationary satellite orbit, the power limits of this recommendation must be adhered to.

It should be noted that new transmitters on a route which cannot be defined as an "existing route" must avoid pointing within 2° of the orbit unless this is absolutely impractical. This policy is consistent with several of the SRSP's, and still remains valid. In the event that the licensee can prove to the Department that avoidance of the orbit is not possible, the Department will entertain a proposal to point within 2° , provided the system meets the power limits of the Recommendation referred to above.

21.3. Limits for Receiving Antennae

Furthermore, it should be noted that receiving antennas must also avoid the orbit, to a large extent for their own protection. The I.T.U. Regulations advise planners of receiving stations in the fixed service operating in bands shared with various space services to avoid directing their antennas towards the geostationary satellite orbit if their sensitivity is sufficiently high that interference from space station transmissions may be significant. Such a precaution must be taken to avoid unexpected interference at a time after the link has been put into operation. A satellite at the intercept point on the orbit is permitted to radiate a power level consistent with limits of the I.T.U. Radio Regulations. As the orbit becomes more crowded with satellites it is unlikely that a satellite would be able to move sufficiently to resolve interference into a terrestrial system, especially if the former is operating in compliance with the Radio Regulations.

21.4. Final Consideration to Avoid the Orbit

A final consideration on avoidance of the geostationary satellite orbit is that all links on all new routes should be checked no matter which frequency band is used. Where a new route is proposed in a given frequency band (both transmit and receive frequencies could be used) and the link points are within 2° of the orbit, and where a transmit frequency is involved, then the power limits naturally apply, but with receive frequencies a judgement factor is involved by the licensee and the Department. Should it be decided to build the stations with that geometry, any systems that are overbuilt in another frequency band will also intercept the orbit. In the new frequency band, the power limits and pointing restrictions hold for any transmitter with an e.r.i.p. exceeding 35 dBW. Thus by accepting the establishment of the geometry of the terrestrial link in the first frequency band, and being pressured towards accepting overbuild in another frequency band, Canada (the Department) would be contributing to the general derogation of the geostationary satellite orbit, and leaving itself open for international criticism.

21.5. Summary

Thus in summary it is advisable to continue planned avoidance of the orbit for terrestrial systems whether they are being overbuilt on an existing route or built as a new route. If avoidance of the orbit is impracticable then the e.i.r.p. restrictions must be adhered to.

Finally, all new links of a radio relay system must avoid the orbit as above, no matter which frequency band is used.

22. Radio Standards Specification 125

Since April 1, 1977 Radio Standards Specification 125, requires that all new installations of single sideband equipment operating between 1605 and 28,000 kHz must use equipment that is type-approved under this specification, and no type-approvals will be granted under Radio Standards Specifications 122 and 123.

22.1. Implementation of RSS 125

Those seeking type-approval of radio equipment under this specification must submit complete test data and documentation in accordance with Radio Standards Procedure 100, before type-approval will be granted.

22.2. Amortization of Land and Mobile SSB Equipment

Existing installations that are licensed for single sideband operation prior to April 1, 1977, using equipment type-approved under Radio Standards Specifications 122 and/or 123 and currently listed in Parts A-11 and A-12 of the Radio Equipment List, will continue to be licensed for the duration of an amortization period that will end on March 31, 1983. Further, such equipment shall continue to qualify for licensing from a technical point of view and shall be licensed or re-licensed subsequent to a change of ownership and/or change of location providing no compatibility problem arises from whatever cause, and providing other licensing criteria are met. On and after April 1, 1983, all installations will be required to use equipment that is type-approved in accordance with Radio Standards Specification 125, and all type-approvals granted under Radio Standards Specifications 122 and 123 will be cancelled.

22.3. S.S.B. Equipment Power in Excess of 1000 watts

Land and mobile single sideband radiotelephone equipment using R.F. power output in excess of 1 kW will be evaluated using Radio Standards Specification 125 as a guide and if acceptable, will be listed in Part B of the Radio Equipment List.

22.4. SSB Bandwidth

The authorized bandwidth for SSB systems is 3 kHz. Upper sideband techniques are to be employed and the centre frequency of the emission (or assigned frequency) will be 1.5 kHz higher than the carrier (or reference frequency).

22.5. Conditions

Applicants for licensing may be required to use directional antennas where feasible and to employ the minimum power required for the service. They may also be required to consider other alternatives to HF communications when available.

23. Publication of Licence Data

A review has been made of the Department's policy concerning the release for publication of the names and addresses of licensees in various classes of radio service, licensed under Radio Act. In particular, the release of such information is essential for EMC purposes to organizations planning terrestrial fixed systems or space systems in the VHF, UHF and microwave bands because the Department requires applicants to coordinate their planned system with other existing or planned systems in the same environment, e.g., Phase I of RSP113 or Phase II of RSP116.

23.1. Present Status

Information, in directory form, will continue to be available to the public for the Amateur Service, the Maritime Mobile Service (ships) and the Broadcasting Service, for use in domestic and international publications.

DOS-S is the organization authorized to release information from computer systems and all requests should be referred to that division.

24. Low Power Transceiver

Radio Standards Specification 120 applies to "mobile station" AM and FM radiotelephone transceivers operating in certain VHF/UHF bands in the frequency range 27.23 MHz to 470 MHz with R.F. power output not exceeding 3 watts.

24.1. Hand Carried Units

In this Specification, the term "mobile station" means a hand-carried low-power portable unit, not intended for permanent installation in vehicles. For this reason, paragraph 4.2 of the Specification states that the transceiver shall be a self-contained unit with integral antenna and power supply.

24.2. Equipment Listing

Equipment type-approved under this Specification will be listed in Part A, Section A-21 of the Radio Equipment List, for use within appropriate frequency bands between 27.410 MHz and 470 MHz.

24.3. Business Band GRS Equipment

Certain low-power units, basically designed to operate in the General Radio Service band 26.960 - 27.410 MHz and type-approved under RSS 136, are also capable of operating in the range 27.410 - 30.560 MHz. Since many of these units do not meet the "equipment requirement" of RSS 120, paragraph 1.9 above, they cannot be type-approved under that Specification. Nevertheless, there is an obvious demand and need for this class of equipment for vehicular use in the so-called "business band" below 30.560 MHz.

24.3.1. Business Band Mobile Equipment

Four watt equipment capable of operating in the 27.410 - 30.560 MHz band, designed to operate with an external antenna and power supply, will be evaluated using RSS 120 as a guide. If found acceptable, such equipment will be listed in Part B of the Radio Equipment List, for vehicular use within the band 27.410 - 30.560 MHz.

24.4. Summary

Equipment of the type in reference listed in Part A-21 of the Radio Equipment List may be licensed throughout the range 27.410 - 470 MHz for use as hand-carried mobile stations only. Equipment of this type listed in Part B of the REL may be licensed for use as hand-carried or vehicular mobile stations but restricted to the band 27.410 - 30.560 MHz.

25. Radio Standard Specification 119

Radio Standards Specification 119, applies to land and mobile station FM or PM transmitters and receivers operating in allocated bands and standard channel spacing as follows:

27.41 - 50 MHz band: 20 kHz
138 - 174 MHz band: 30 kHz
406.1 - 430 and 450 - 470 MHz band: 25 kHz

25.1. Implementation of RSS 119

Implementation of Radio Standards Specification 119, effective 19 December, 1980 and amortization of existing land and mobile VHF/UHF equipment type-approved in accordance with Radio Standards Specifications 105, 126 and 139 is contained in TRC-44. Equipment type-approved under RSS-119 is listed in Part A-31 of the Radio Equipment List.

26. Radio Standard Specification 140

Radio Standards Specification 140, applies to land and mobile station AM transmitters and receivers operating in the 27.41 - 50 MHz band with 20 kHz channel spacing.

27. Exemption From Licence, Receivers of Environmental Broadcasts

Under the Radio Act the term "Broadcasting" is considered to be sufficiently broad to include the "broadcasting" of environmental information (weather, sea conditions, etc.). On this basis, single and multi-channel fixed frequency radio receivers are exempt from licensing. Therefore, this exemption includes those fixed channel receivers designed and marketed for the purpose of receiving weather broadcasts from Ministry of Transport Coast Guard Stations on the frequency 161.650 MHz and environmental broadcasts from stations operated by the National Oceanic and Atmospheric Administration in the United States on the frequencies 162.400 and 162.550 MHz.

27.1. Weatheradio Canada Service

Weatheradio Canada is a Public Service provided by the Department of Environment, designed to provide continuous weather reports of current conditions and forecasts directly to all listeners, including those with a specific need for weather information, such as farmers, pleasure boaters, campers, skiers, drivers and others. The frequencies in use are 162.400, 162.475 and 162.550 MHz. The environment broadcasts from stations operated by the National Oceanic and Atmospheric Administration in the United States are on the frequencies 162.400 and 162.550 MHz.

28. Low Power Repeaters in Isolated Areas

Low-power transistorized VHF transmitters - receivers have been developed and specifically designed to operate as automatic repeaters on mountain tops remote from access roads and electric power. These units, with battery packs capable of operating for at least a year, can be readily transported by helicopter. The dependability of these units makes them attractive for radio systems requiring wide coverage, such as provincial police, forestry, hydro, highway and common carrier networks, particularly in British Columbia. The design is such that they can be readily linked together to provide point-to-point circuits, in addition to the normal base/mobile use.

28.1. Low Power Remote Repeater Equipment

The equipment involved cannot meet the type-approval requirements of Radio Standards Specification 119. Moreover, since it is not designed for mobile use it cannot be type-approved under Radio Standards Specification 121, even though it might comply with those minimum performance standards. An alternative, with regard to the acceptability of this equipment, would be to evaluate it under Radio Standards Procedure 100 and, if acceptable using Radio Standards Specification 121 as a guide, listing it in Part B of the Radio Equipment List. However, considering the technical limitations of these units, we are not prepared to consider type-approval or type-acceptance for land station use because such action (and appropriate listing in the Radio Equipment List) would allow its use at fixed locations in congested as well as isolated areas.

There is a valid but limited requirement for this type of land station in isolated areas, where the technical deficiencies are not liable to cause interference problems. Therefore, applications for licensing of these repeaters in non-frequency congested areas shall be considered on a case-by-case basis, even though the equipment involved is not listed in the Radio Equipment List for land station use.

Each application proposing to employ low-power transistorized equipment as described above shall be accompanied by supporting technical details. The proposal will be evaluated in terms of the radio environment and if considered acceptable, using Radio Standards Specification 121 as a guide, it will be given special case consideration. No land station listing will be made in the Radio Equipment List for the reasons stated above. In addition, mobile equipment type-approved under Radio Standards Specification 121 (and listed in Part A of the Radio Equipment List) may also be considered on a special case basis for licensing as mountain-top repeaters.

Applications involving the use of these units for single or multiple hop radio links (tandem operation) should be submitted in accordance with Radio Standards Procedure 101. Systems employing such equipment shall be operated on a non-interference basis and shall not be protected from interference to the same extent as higher grade systems.

29. Maritime Mobile - Satellite Service

A mobile-satellite service in which mobile earth stations are located on board ships; survival craft stations and emergency position-indicating radiobeacon stations may also participate in this service.

29.1. Eligibility

GRR-I states, in part, the Minister may issue a station licence to any person who is the registered or licensed owner of a ship or vessel that is registered or licensed under the Canada Shipping Act, for the establishment and operation of a radio station on board such ship or vessel.

29.2. Minister's Statement

The Minister's Statement of February 27, 1979 reads in part: Licence applications will be accepted from a user on a case-by-case basis, for any earth station temporarily operating in remote off-shore locations. In these situations, licences for stations providing telecommunications services via the Canadian Satellite System would only be issued upon satisfactory demonstration that a connecting agreement has been arranged with an appropriate Canadian Telecommunication carrier.

29.3. Role of Telesat and Teleglobe

Telesat Canada and Teleglobe Canada are the two telecommunications carriers who own and operate satellite facilities providing commercial satellite telecommunications services for Canada.

29.3.1. Telesat

Telesat Canada primarily provides domestic satellite communications between locations in Canada extending from the territorial sea (the 12 mile limit).

29.3.2. Teleglobe

Teleglobe Canada is authorized to establish, maintain and operate in Canada and elsewhere, external communication services for the conduct of public communications. In situations involving communications beyond the Canadian Territorial Sea (12 mile limit), Teleglobe has been given the responsibility for provision of the service beyond the territorial sea to the limit of the continental shelf.

29.4. Radio Standards Procedure 114

Radio Standards Procedure 114 (currently under review) outlines the eligibility and procedures to be followed by applicants to obtain a licence from the Minister of Communications for an earth or space station, other than television receive-only (TVRO) earth stations, which are covered under RSP-116.

29.5. Priority

It is intended that if an oil company for example, in exploration or exploitation of resources on the continental shelf, wanted to establish satellite communications, and a choice existed between two similar systems, such as, the U.S. Westar or the Telesat ANIK A, then the Canadian Satellite would normally be favoured.

30. Foreign and Internationally Controlled Satellites

In some applications it is possible that non-Canadian facilities may be better suited to provide the tele-communications requirements. This may occur particularly where a Canadian satellite such as ANIK A is technically less suitable for maritime purposes than a system such as the U.S. Marisat, which is specifically designed for Maritime use.

Applications will be considered on a case-by-case basis for licences to operate earth stations through foreign or internationally controlled satellites such as the U.S. Marisat. Applicants should be guided by the following:

- a) Supply to the extent possible, information contained in RSP 114, particularly pages 14 through 17 and Section 9.1 on page 18, Appendix I;
- b) Contact Teleglobe Canada to discuss satellite service requirements and obtain access codes of gateways to satellites. (Teleglobe, 680 Sherbrooke Street West, Montreal, Telex 05-25690);

- c) Satisfy Comsat General Corporation, manager of the Marisat system, that the shipboard terminal is satisfactory;
- d) Submit completed ship station radio licence application form (16-25);
- e) Communications to be carried on the up-link and down-link frequencies. (Telex, telephone, facsimile, data and/or safety);
- f) Destination of messages or data carried on the system;
- g) Technical and operating characteristics of the terminal;
- h) Occupied bandwidth and spurious output; and
- i) Should the shipboard earth station terminal be a substitute for a radiotelegraph installation, obtain approval from the Canadian Coast Guard, and arrange for the issuance of appropriate Safety Certificates.

30.1. INMARSAT

Canada is taking an active role in preparatory activities for the establishment of an international Maritime Mobile Satellite System (INMARSAT) for the early 1980's. Such a system would operate on the 1.5/1.6 GHz (L-Band) frequencies and would have the potential to provide telecommunications services to vessels, semi-permanent and possibly permanent structures in a maritime environment.

31. Earth Station Data Collection Platforms

A number of Government Departments, Agencies and Companies have licensed earth stations located in isolated areas of Canada. These stations are remote sensing data collection platforms (DCP). They transmit in the 400 MHz band through the U.S. Landsat and/or GOES orbiting satellites to centres in the United States. The collected data is then forwarded to the Canada Centre for Remote Sensing.

31.1. Role of DCP

The DCP's are used to transmit data for air precipitation, air temperature, relative humidity, snow cover and wind conditions and also for water level, water temperature, water quality and air conditions.

31.1.1. Landsat System

The Landsat satellite has the capability of providing repetitive synoptic imagery of the earth's surface, in addition to a data collection system that enables a user of the imagery to obtain near real time sensor data. Sensor data is collected, encoded and transmitted by the data collection platform (DCP) along with a platform identification, to the space craft, which relays the data to a receiving station, where it is sorted and sent to the users in computer printout or punch-card format.

31.1.2. GOES System

The GOES system is the U.S. contribution to a worldwide network of operational, non-geostationary environmental satellites. The satellites carry a Visible and Infrared Spin Scan Radiometer (VISSR) and a Data Collection System (DCS).

Users of the GOES (DCS) are assigned channels and time slots during which data can be transmitted. There are two basic types of operation of the DCS; they are, interrogated and self-timed. The transmit sequence of the interrogated platform is initiated by means of a coded signal from the GOES Satellite, while that of the self-timed unit is initiated by an accurate clock within the platform.

A. 16/7/69 Boundaries - United States/Canada Co-ordination Zone

1. Boundaries - US/Canada Co-ordination Zone. The areas which are involved lie between lines A and B, and between lines C and D as indicated hereunder.
2. Line A - Begins at Aberdeen, Wash. running by great circle arc to the intersection of 48° N. and 120° W., thence along parallel 48° N. to the intersection of 95° W., thence by great circle arc through the southermost point of Duluth, Minn., thence by great circle arc to 45° N. and 85° W., thence southward along meridian 85° W. to its intersection with parallel 41° N., thence along parallel 41° N. to its intersection with meridian 82° W., thence by great circle arc through the southernmost point of Bangor, Me., thence by great circle arc through the southermost point of Searsport, Me., at which point it terminates.
3. Line B - Begins at Tofino, B.C., running by great circle arc to the intersection of 50° N. 125° W., thence along parallel 50° N. to the intersection of 90° W., thence by great circle arc to the intersection of 45° N. $30'$ W., thence by great circle arc through the northermost of Drummondville, Quebec (Lat: $45^{\circ} 52'$ N. Long: $72^{\circ} 30'$ W.), thence by great circle arc to $48^{\circ} 30'$ N. 70° W., thence by great circle arc through the northermost point of Campbellton, N.B., thence by great circle arc through the northermost point of Liverpool, N.S. at which point it terminates.
4. Line C - Begins at the intersection of 70° N. 144° W., thence by great circle arc to the intersection of 60° N. 143° W., thence by great circle arc so to include all of the Alaskan Panhandle.
5. Line D - Begins at the intersection of 70° N. 138° W., thence by great circle arc to the intersection of $61^{\circ} 20'$ N. 139° W. (Burwash Landing), thence by great circle arc to the intersection of $60^{\circ} 45'$ N. 135° W., thence by great circle arc to the intersection of 56° N. 128° W., thence south along 128° meridian to Lat: 55° N., thence by great circle arc to the intersection of 54° N. 130° W., thence by great circle arc to Port Clements thence to the Pacific Ocean where it ends.

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