Government
of Canada
Department of Communications

PM 1-4

POLICY MANUAL

PM-1
RADIO LICENSING

PART 4

1. PRIVATE COMMERCIAL SERVICE
2. PRIVATE COMMERCIAL RECEIVING SERVICE
3. PRIVATE COMMERCIAL AUTOMATIC REPEATER SERVICE

TELECOMMUNICATION REGULATORY SERVICE

POLICY MANUAL

LICENSING - RADIO SERVICES

REVISION RECORD - FIRST EDITION

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POLICY MANUAL

PM-1

SECOND EDITION

REVISION NO. 66

APRIL 24, 1984

Revision Summary - (Revisions are indicated by ***).

PM-1-4

1. PM-1-4 has been updated by adding information concerning the national low power frequency assignments, aids for the handicapped and evaluation criteria for trunked mobile radio systems.

2. Information regarding the phonic ear, power line carriers and low power wireless cameras has been revised.

3. Minor editorial changes.

NEW AND REPLACEMENT PAGES

1. Replace table of contents and pages 6, 7, 34, 52, 53, 56, 57 and 58 with the new table of contents and new pages 6, 7, 34, 52, 53, 56, 57 and 58.

2. Add Appendix L.

July 13, 1984

POLICY MANUAL

PM-1 SECOND EDITION

REVISION NO. 57 DECEMBER 10, 1982

Revision Summary - (Revisions are indicated by ***).

PM-1-4

1. PM-1-4 has been revised to reflect the addition of the new 400 and 800 MHz bands.
2. Information regarding shared repeaters has been added.
3. Minor editorial changes.

NEW AND REPLACEMENT PAGES

PM-1-4

1. Replace table of contents and pages 3, 8, 13 and 17 through 59 with new table of contents and pages 3, 8 and 13 through 63 and new appendices F, G, H, I, J and K.

Feb 25/83

DDS-F Staff
2 update manuals

POLICY MANUAL

PM-1 SECOND EDITION

REVISION NO. 52 APRIL 1, 1982

REVISION SUMMARY

PM-1-4 1. PM-1-4 has been completely up-dated as the result of a task force study.

NEW AND REPLACEMENT PAGES

PM-1-4 1. Replace entire PM-1-4.

May 19/82

NOTICE

This work represents a re-write of the Policy Manual, Part PM-1-4. Radio inspectors are cautioned that the review and consultation processes involved in the re-write of this manual were not completed. Errors in content or composition may be present. If detected, they should be reported to DOS via the proper channels.

RADIO LICENSING

TABLE OF CONTENTS

PARAGRAPH

1. PRIVATE COMMERCIAL SERVICE

Definition

1.1 "Private Commercial Service" - a service provided by land or mobile stations or a system of such stations for

a) the handling of private communications of the licensee,
b) the control of mechanical objects or devices for industrial purposes, or
c) the operation of a radionavigation service.

(Ref. General Radio Regulations, Part II, Sec. 2.)

Eligibility

1.2 Subject to the provisions of the Radio Act, the General Radio Regulations and the availability of frequencies, individuals or companies having a need for radio facilities within the context of para. 1.1 may be granted licences to establish radio stations in the Private Commercial Service.

Application Guidelines

1.2.1 Applications for fixed service frequencies above 890 MHz must be submitted in accordance with procedures outlined in RSP113. Technical requirements for the requested frequency band are outlined in the SRSP applicable to that band. In addition, the Department has issued radio licensing policies for terrestrial fixed services in certain microwave bands, as follows:

a) fixed services in the bands 7125-7725 and 7725-8275 MHz - see Appendix C,
b) short haul microwave systems in the bands 12.7-12.95 GHz - see Appendix D,
c) short haul microwave systems in the band 14.5-15.35 GHz - See Appendix E.

Caution to Applicant

1.2.2 The Department of Communications does not consider itself bound by financial or commercial commitments made by the applicant before a licence has been granted.

Priority

1.3 The Department recognizes a priority in the use of frequencies for various radio services. Services involving safety of life and property take precedence over others to be established for industrial or business communication purposes. In applying this principle to the private commercial service the following priorities have been established:

1) Safety Services - Any terrestrial station or system, eligible for licensing in the Private Commercial Service, that directly contributes to the safety of life and property, including police, fire and ambulance services, civil defence, main-line railway services, and penitentiary services.

   In general, safety services have priority over other (non-safety) services in the allocation of non-shared channels, and will be protected from harmful interference, to the extent possible.

2) Preferred Services - Any terrestrial station or system, eligible for licensing in the Private Commercial Service, that contributes to the efficient operation of public utilities, transportation, health and welfare, industry, industrial development and information services. Examples include, but are not restricted to the following:

   a) Utilities - electric, gas and oil distribution and maintenance;
   b) Transportation - operations in support of railway (safety) services listed above, operations in the aeronautical or marine environments in support of aeronautical or maritime (safety) services, bus and trucking services, road and highway maintenance, taxi services, towing services;
   c) Health and Welfare - medical and veterinary services, operations in support of municipal, provincial or national (safety) services listed above;
   d) Industry - heavy construction, operations involving the management of national resources including agricultural, forest and mine products, operations in support of public communication facilities;
   e) Industrial Development - exploration and surveying; and
   f) Information - news gathering and operations in support of broadcasting.

In general preferred services will be allocated separate frequencies, but where frequency congestion exists, or where channels are insufficiently loaded, licensees may be required to share the assigned channels with similar users, on an equal basis.

3) All Other Applicants

Applicants not included in the above but including those having communication requirements for small businesses, light industry and other applications of the use of radio may be granted licences provided frequency channels are available for assignment in the area involved and that assigned frequencies are shared with other private systems in the same local area. No protection from co-channel interference is granted to licensees in such instances.

Land Mobile and Fixed Service Systems ***

1.4 Frequency Bands

MHz	MHz
1.605 - 25.600	138.000 - 144.000
26.175 - 26.905	148.000 - 149.900
27.410 - 28.000	150.050 - 174.000
29.700 - 50.000	406.100 - 430.000
72.000 - 73.000	450.000 - 470.000
74.600 - 74.800	806.000 - 821.000
75.200 - 76.000	851.000 - 866.000

Note 1: Within the United States/Canada frequency coordination zone, proposed assignments above 30.560 MHz with a power in excess of 5 watts ERP are subject to coordination if within bands covered by the US/Canada Agreement.

Note 2: In the bands 225.000-328.600 MHz and 335.400-399.900 MHz the primary service is Fixed and Mobile, with some Space Operation (telemetering) permitted in the 272-273 MHz portion. In Canada these bands are administered by the D.N.D. under Security Regulations and are not normally available for assignment. The band 328.6-335.4 is allocated for radionavigation.

Land Mobile and Fixed Systems in the Bands Below 50 MHz

1.4.1 Specific frequencies are available to the extent feasible in the bands between 1.605 and 25.560 MHz, also between 26.175 and 50.000 MHz for private land mobile and fixed systems. However, in making assignments to such systems in the 30.560-50.000 MHz band, preference shall be given to the requirements of communication common carriers. Applicants for private systems should be made aware of the propagation characteristics of these bands, and that it is not possibile to protect their communications from harmful sky-wave interference.

Technical

1.4.1.1 In the 26.175-26.905 MHz band, equipment operating at 10 kHz channel spacing shall be technically acceptable using RSS136 as a guide. In the 27.410-50.000 MHz band, equipment operating at 20 kHz channel spacing shall be type approved under RSS119 (FM) or RSS140 (AM) however, FM

equipment with a power output not exceeding 3 watts may be type approved under RSS120. Fixed services operating below 30 MHz are prohibited by the ITU Radio Regulations from using F3 emissions. Applicants for private fixed and mobile voice systems in the bands between 1.6 and 30 MHz are required to use SSB in lieu of DSB. In such cases type approval is required under RSS125. Where SSB is used above 30 MHz, RSS125 is used as a guide.

Frequency Assignments

1.4.2 Frequencies shall be assigned on a shared no protection basis and efforts will be made to protect safety and preferred services. Allotment of specific frequencies for private land mobile and fixed service systems shall depend on the number of assignments for various types of users, e.g., light industry, small business.

Temporary Low Power Systems (30.56-50 MHz)

1.4.3 The frequencies 32.48, 32.52 and 32.56 MHz are available for low power (5 Watts ERP or less) "on site" radiocommunication systems of a temporary nature, e.g., building construction sites and land surveying operations.

Additional Frequencies (32.50 and 32.54 MHz)

1.4.3.1 In addition, the split channel frequencies 32.50 and 32.54 MHz may be assigned at a later date if the requirement for this type of service expands beyond the capabilities of the former three frequencies.

U.S./Canada Co-ordination Obviated

1.4.3.2 In restricting the systems to powers of 5 Watts ERP or less, the necessity for United States/Canada frequency co-ordination is obviated and interim authorizations may be granted at Regional level.

Temporary Requirement

1.4.3.3 These frequencies are allocated to meet a requirement for temporary radiocommunication facilities because the duration of the operation is short or of an urgent nature, and the applicant could not wait for the longer processing time involved in normal procedures.

"One Time" Basis

1.4.3.4 It is intended that the granting of such authority be on a "one time" basis only. It is <u>not</u> intended that this be applied where there is a continuing requirement or a recurrent but temporary need for radiocommunication facilities; however, one of the three frequencies mentioned may initially be assigned in such cases pending normal processing of the application and the assignment of a permanent frequency. The frequency assigned on a temporary basis will be withdrawn when another frequency has been assigned for continued use.

1.4.3.5 Regional Offices are expected to use discretion when applying these guidelines.

Power-Private Land Mobile Systems

1.4.4 The transmitter power output and the effective radiated power (ERP) of private land mobile stations, operating in the 27.41-50 MHz band, shall not exceed that necessary to provide the required service, and except as provided for in para 1.4.4 5) they shall not exceed the following limits:

	Transmitter RF Power (Watts)	ERP (Watts)
Base station	100	125
Mobile station	60	60

1) Transmitter RF power is that power accepted by the Department for listing in the Radio Equipment List.

2) Effective radiated power is the RF power delivered to the antenna terminals, corrected for antenna gain relative to a half wave dipole.

3) In the band 27-44 MHz where harmonic relationship exists with TV channels 2 to 6 (54-88 MHz) lower power may be required by the department to avoid interference to TV reception. Caution should be exercised in assignments where harmonic relationships exist.

4) In the band 41-47 MHz lower power may be required to avoid interference to the IF channels of television receivers.

5) In rural areas, i.e. areas located 75 miles from the boundaries of a city or town considered to be an area of present or future frequency congestion, the base station ERP may be increased up to 350 Watts and the mobile station ERP increased up to 100 Watts. In all other circumstances, applications proposing the use of powers in excess of those stipulated shall be considered on a case-by-case basis provided they are accompanied by a submission from the applicant justifying on technical or operational grounds the use of power as requested. Such submissions shall require a recommendation of the Regional office concerned. Normally such powers may be authorized only in areas where frequency congestion is not acute.

6) Notwithstanding the power levels listed above the applicant is required to use the minimum power necessary for the service and he must accept the condition that corrective steps must be taken, including decrease in power level, should interference be caused to broadcast reception or other licensed radio services.

Low Power Communications in the 72-76 MHz Band

1.4.5 A limited number of frequencies may be made available in the 72.02-72.98, 74.62-74.78 and 75.22-75.98 MHz bands for low power (1 watt) communications within industry involving the safety of personnel, control of machinery, and similar functions.

Frequencies Shared No-Protection Basis

1.4.5.1 Regional offices may select the frequencies to be used on a shared, no-protection basis, and subject to not causing harmful interference to other radio services.

Technical

1.4.5.2 The radio equipment shall be technically acceptable under Radio Standards Procedure 100, and

1) the D.C. power input to the transmitter final r.f. amplifier stage shall not exceed 1 Watt;

2) the antenna gain shall not exceed that of a half wave dipole and horizontal polarization shall not be permitted;

3) the antenna shall be an integral part of the transmitter/receiver unit, except when permanently installed in a vehicle, in such case the antenna may be separated from the unit for ease of mounting; and

4) Unmodulated carrier, AM or FM emissions may be authorized.

General

1.4.5.3

1) It is not proposed to make the bands between 72.0 and 76.0 MHz generally available for other (higher power) fixed and mobile operations because of the interference potential in built-up areas.

2) All communications shall be carried out within the confines of an industrial site such as a plant, factory, ship yard, mill or other manufacturing area.

3) Each station authorized shall be classified and licensed as a mobile station; any mobile station may perform the function of a base station.

4) Harmful interference shall not be caused to the reception of television signals on channels 4 and 5.

Education of the Deaf (Phonic Ear)

1.4.5.4 As an aid in the training of persons handicapped by defective hearing, wireless microphone units have been developed for operation in the 72-76 MHz bands. Since no provision for exemption exists in the Radio Regulations for such equipment, this equipment is subject to licensing irrespective of what power is employed.

1.4.5.4.1 The general practice in other services is to licence the owner or the one responsible for the operation of the equipment. However, since there is little likelihood of harmful interference being caused to other services by the operation of the "phonic ear" type of equipment, the normal practice with respect to ownership and control is not required. A provincial agency or other responsible entity would be acceptable as the licensee of the equipment involved.

***

1.4.5.4.2 The equipment is to meet the following criteria:

Max frequency diviation: 20 kHz
Max power output : 250 mW
Max field strength at 30 n: 8000 uV/m
Frequency tolerance :.005%

1.4.5.4.3 Similar types of wireless microphone units have been developed for operation in the 88-108 MHz band. Such units are exempt from licensing provided they meet the power restrictions set forth in Section 6 of the General Radio Regulations, Part II.

Land Mobile & Fixed Service Systems in Bands Below 150.8 MHz

1.4.6 The bands immediately below 150.8 MHz are available for increased use by Land Mobile systems, on a shared basis with Fixed systems.

Frequency Sharing Mobile and Fixed Service

1.4.6.1 Fixed systems in the bands 138-144 MHz and 148-150.8 MHz are almost exclusively located in the rural areas, and a number of urban land mobile systems have already been licensed in these bands. Since land mobile services are concentrated in more populated areas, it is feasible to increase sharing between land mobile services and fixed services in these bands, in order to relieve pressure on the band 150.8-174.0 MHz in congested areas. For this purpose, the guidelines in 1.4.6.2 have been developed.

Sharing Criteria

1.4.6.2

a) All areas

1) 138-144 MHz

Frequencies are available for land mobile systems on a secondary basis to low capacity fixed systems, i.e. fixed systems employing up to 12 voice circuits and bandwidths not in excess of 120 kHz in each direction. Fixed systems exceeding these criteria will have equal status with land mobile systems.

2) 148.0 -149.9 MHz
150.05-150.8 MHz

Frequencies are available for land mobile systems on an equal status with low capacity fixed systems, as defined above. Fixed systems exceeding the above criteria will have secondary status to land mobile systems.

Notes: The band 149.9-150.05 MHz is reserved world-wide for the Radionavigation Satellite Service.
In the band 148.480-149.540 MHz priority is given to public and private paging systems, and to civil emergency systems.

b) Conditions applicable to the Land Mobile Service

1) When technically feasible, assignments for land mobile systems will continue to be made in the 150.8 -174 MHz band.

***

2) When frequency congestion or other technical reasons preclude the use of frequencies in the 150.8-174 MHz band, the applicant is urged to utilize the 406.1-430 and 450-470 MHz bands or the bands 806 to 821 MHz paired with 851 to 866 MHz.

3) When the Department is satisfied that technical reasons preclude the use of 406.1-430 and 450-470 MHz or higher band equipment, assignments for land mobile systems may be made in the 138-144 and 148-150.8 MHz bands. These assignments require the approval of the Regional Office concerned. (See assignment plan and guidelines, section 1.4.6.6.).

4) No provision is made in the assignment plan for sub-allocation of blocks of these frequencies to any particular category of service. It is considered that the bands in question should continue to be available for low capacity fixed systems, but also available for land mobile use under the conditions outlined in 1) to 3) above.

5) Duplex channels may be made available for safety and preferred categories of service where a greater measure of interference protection and privacy is desirable, where loading warrants a second frequency and where frequencies can be made available.

Fixed Services (Point-to-Point) in these Bands

1.4.6.3

a) All Areas

1) 138-144 MHz

Frequencies may be made available with primary status for low capacity fixed systems, i.e., fixed systems employing up to 12 voice circuits and bandwidths not in excess of 120 kHz in each direction.

2) 148-149.9 MHz
150.05-150.8 MHz

Frequencies are available for fixed systems (as defined above) on an equal status with land mobile systems.

Note: Fixed systems employing more than 12 voice circuits and/or bandwidths in excess of 120 kHz may be considered on a special case basis, and will normally be authorized only in non frequency-congested areas. Such systems, where authorized, will have equal status with land mobile systems in the bands 138.0-144.0 MHz and secondary status to land mobile systems in the bands 148-149.9 and 150.05-150.8 MHz.

Technical Requirements

1.4.6.4

a) Land Mobile Services

1) Land mobile equipment must be type approved under Radio Standards Specification 119. However, low power mobile equipment 3 Watts or under may be type approved under Radio Standards Specification 120, and mobile equipment 10 Watts and under may be type approved under Radio Standards Specification 121.

2) The power limitations applicable to land mobile systems in the 150.8-174.0 MHz band (base transmitter 60 Watts - ERP 125 Watts and mobile transmitter 30 Watts - ERP 30 Watts) shall be applied to land mobile systems in the above bands, (sub para. 1.4.10.).

b) Fixed Services

The proposed system shall be judged for technical acceptability on the basis of data required under Radio Standards Procedure 101.

Additional Notes

1.4.6.5

a) The assignment of frequencies for fixed and land mobile systems in these bands will be subject to Canada/US frequency co-ordination, as required.

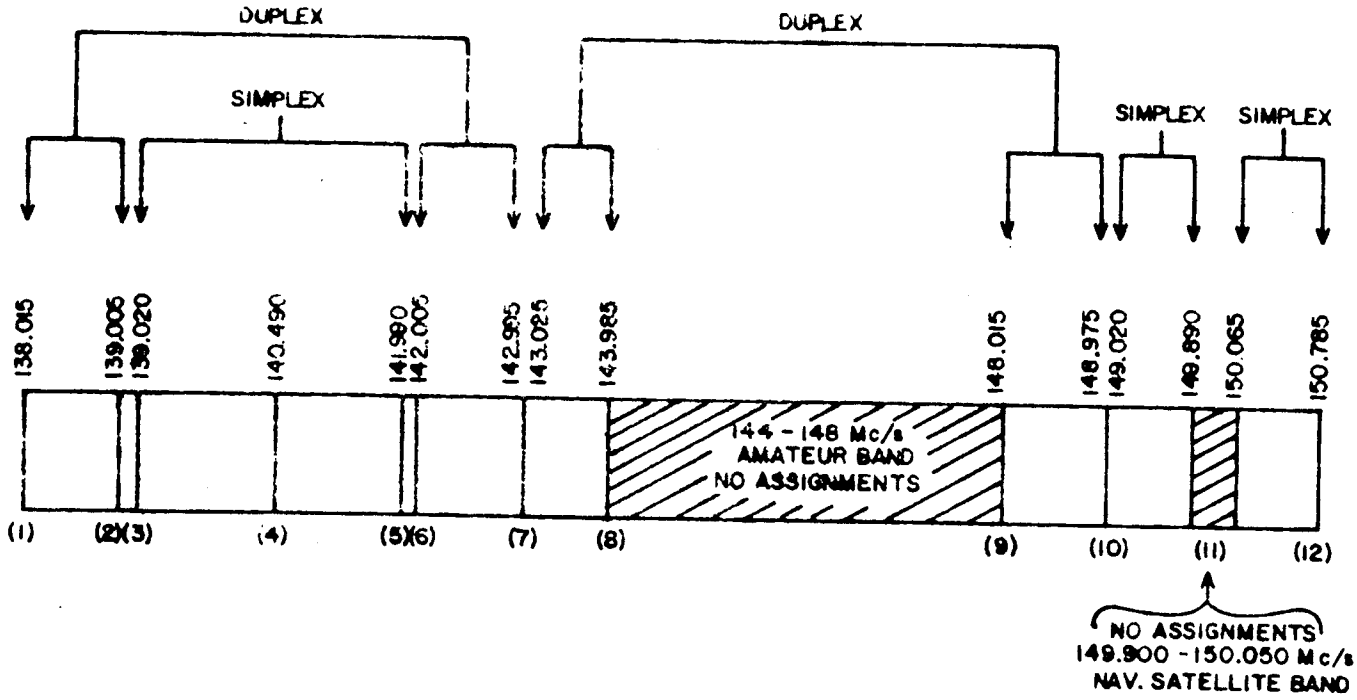
b) The attached assignment plan (applicable to the land mobile service) should also be used as a guide when making assignments in the fixed service.

c) For duplex operation, in the 143-144 MHz and 148-149 MHz portions of the band, the base station transmit frequency shall be assigned in the lower portion of the band and the mobile transmit frequency assigned in the upper portion of the band.

Band Plan 138-144 MHz and 148-150.8 MHz

1.4.6.6 Plan and Guidelines for Assignment of Frequencies for land mobile and fixed service systems in the 138-144 MHz and 148-150.8 MHz Bands (30 kHz spacing).

ASSIGNMENT PLAN



MHz

**	(1)	138.015 - First mobile transmit frequency
**	(2)	139.005 - Last mobile transmit frequency
*	(3)	139.020 - Last simplex frequency (Lower)
*	(4)	140.490 - First simplex frequency
*	(5)	141.990 - Last simplex frequency (Upper)
**	(6)	142.005 - First base transmit frequency
**	(7)	142.995 - Last base transmit frequency
***		143.025 - First base transmit frequency
***	(8)	143.985 - Last base transmit frequency
***	(9)	148.015 - First mobile transmit frequency
***	(10)	148.975 - Last mobile transmit frequency
		149.020 - First simplex frequency
	(11)	149.890 - Last simplex frequency
		149.900 - 150.050 - Navigation satellite band
		150.065 - First simplex frequency
	(12)	150.785 - Last simplex frequency

* The original plan allocated the band 138 - 143 MHz for simplex operations whereas this plan permits both simplex and duplex operations.

** 138.015 - 139.005 MHz paired with 142.005 - 142.995 MHz

*** 143.025 - 143.985 MHz paired with 148.015 - 148.975 MHz

Guidelines

1) Simplex assignments should be made within the band 139.020-141.990 MHz. The first assignment should be 140.490 MHz (15 kHz offset from 2 frequency pairs) working outward in both directions, this will allow the simplex zone to be as wide as requirements necessitate.

2) Duplex assignments should be made starting from the lower end of the two frequency blocks (138.015-139.005 MHz and 142.005-142.995 MHz) and filling them up in consecutive fashion rather than making random assignments throughout the band. Departures from this concept will be permitted to meet special frequency separation requirements of complex systems.

3) To ensure a minimum of interference between two-frequency and one-frequency channels, the two types of channels should always be separated by an odd number of half channels, so that IM products of one group will fall between channels of the other group.

4) Duplex assignments in the 138.015-142.005 MHz and 143.025-148.015 MHz pairs do not necessarily have to be pairs with constant separation between them e.g.,

138.015	-	142.005 MHz	
138.045	-	142.035 MHz	
143.025	-	148.015 MHz	
143.055	-	148.045 MHz	etc.

they may be

138.015	-	142.065 MHz	
138.045	-	142.605 MHz	
143.025	-	148.225 MHz	
143.055	-	148.435 MHz	etc.

this will enable assignments to be made,

a) to overcome potential difficulties in co-ordinating frequencies, and

b) to accommodate applicants who may need frequency separations other than the normal 4 or 5 MHz (approx.).

5) Frequencies for land mobile systems (simplex or duplex) should be assigned first from the upper portion of the band, i.e., 143-144 MHz and 148-150.8 MHz noting that the lower portion (138-144 MHz) is allocated on a primary basis to low capacity fixed systems.

6) Attempt to assign in the 138-139 MHz and 142-143 MHz portion of the band rather than in the 143-144 MHz and 148-149 MHz portion of the band all

a) <u>fixed systems</u> which go through urban areas, and

b) repeater type mobile systems, with the repeater transmit frequency in the 142-143 MHz portion of the band.

7) The portion of the band between 139.020-141.990 MHz is shown in the plan as being available for simplex assignments. Regions may assign frequencies for duplex operation; however, discretion should be used. Base station frequencies should be selected in the upper portion whereas mobile frequencies should be selected from the lower portion of the band 139.020-141.990 MHz.

*** 8) Single frequency assignments between 149.020-149.890 MHz are offset by 15 kHz from assignments nearest duplex pairs. Assignments between 150.065-150.785 MHz are made on primary channels.

9) The above plan and procedure shall be used as a guide in the selection and assignment of frequencies wherever feasible. However, it may not be possible to accommodate certain communication requirements within the plan. Deviations from the plan to accommodate unusual circumstances may be authorized at the Regional level.

150.8-174.0 MHz Band

1.4.7 Radio Standards Specification 119, issue 2 became effective December 19, 1980 replacing RSS105, RSS126 and RSS139. Existing equipment approved under RSS105, RSS126 and RSS139 will continue to be licensed during the 10 year amortization period ending December 18, 1990.

All new installations proposing the use of equipment not classed as existing as defined in TRC 44 must meet the provisions of RSS119, or RSS120 and RSS121 for lower power equipment of 3 and 10 Watts respectively.

*** Note: All installations utilizing equipment which was approved for wideband operation and was licensed prior to January 1, 1969, or added to an existing system after that date, shall have been removed from service.

Temporary Assignment Land Mobile Service

1.4.8 In order to meet requirements for frequency assignments in areas within the U.S./Canada co-ordination zone where there is a need for immediate land mobile communications the following frequencies are available:

Frequencies (MHz)	Allocation	Use
34.0600	Base or mobile	Normally for simplex
41.4200	stations	operation, however,
*138.4050	"	two frequency duplex
*142.3950	"	operation may be
167.730	"	authorized in
170.940	"	accordance with
462.500	"	1.4.9.1
467.650	"	

* Note: 138.4050 MHz and 142.3950 MHz only required on temporary basis in Atlantic and Central Regions.

Maximum Power Levels

1.4.8.1 The maximum power levels to be employed shall be in accordance with those indicated for the frequency bands involved.

Frequencies Temporarily Assigned in Co-ordination Zone

1.4.8.2 These frequencies have been successfully co-ordinated with the United States throughout the U.S./Canada co-ordination zone. Pending the co-ordination and selection of a specific frequency for use on a continuing basis these frequencies may be assigned on a temporary basis.

UHF Wide Area and Common Use Frequencies

1.4.8.3 The frequencies 418.050, 418.075 and 418.575 MHz are available in Canada (and the U.S.A.) for "wide area" and "common use", on a shared, no-priority basis.

UHF "Talk-Around" Facilities ***

1.4.8.4 The frequencies 411.3875 MHz (mobile transmit) and 418.0500 MHz (repeater transmit) are generally available for "talk-around" purposes upon justification of need. Mobile stations are restricted to 2 watts operating on a no-protection, non-interference basis. District Office frequency clearance is required prior to being placed in operation in a given area.

Duplex Operation 150.8-174.0

1.4.9 Applications proposing duplex operation (two frequency two-way communication) would normally fall into four categories, those intended

1) to provide a degree to privacy;
2) to reduce interference experienced by a simplex system;
3) to accommodate a larger number of mobile units; and
4) to make possible connection to common carrier landline systems.

In Safety and Preferred Services

1.4.9.1 It is considered that duplex operation should not be discouraged in the safety and preferred services where a greater measure of interference protection or privacy is desirable, where loading warrants a second frequency, and where frequencies can be made available. Applications, proposing duplex (2 frequency) operation in the bands between 138 and 174 MHz involving the safety and preferred services, may be given favourable consideration subject to

1) the availability of frequencies in the area;
2) the need for a measure of interference protection and privacy, e.g., Municipal, Provincial and Federal Government operations;
3) the loading capacity of the system being increased; and
4) the frequencies being in accord with current and future frequency allocations and planning.

Note: Frequency channels for duplex operation in the 150.05 - 174.0 MHz band have been allocated for the Communication Common Carriers, i.e., the General Land Mobile Radio Service as provided by telephone companies, the Restricted Common Carrier Land Mobile Service (RCCMRS) and the Maritime Mobile Ship/Shore Public Correspondence Service.

Transmitter Power Private Land Mobile VHF Systems

1.4.10 The transmitter power output and the effective radiated power (ERP) of land mobile service stations, in the VHF bands, shall not exceed that necessary to provide the required service, and, except as provided in para. 1.4.10.1 shall not exceed the following limits:

	Transmitter R.F. Power (Watts)	E.R.P. (Watts)
Base Station	60	125
Mobile Station	30	30

In the above context the following definitions of transmitter R.F. power and E.R.P. apply:

1) transmitter R.F. power is that power accepted by the Department for listing in the Radio Equipment List; and

2) effective radiated power is the R.F. power delivered to the antenna terminals, corrected for antenna gain relative to a half wave dipole.

1.4.10.1 In exceptional circumstances, applications proposing the use of powers in excess of those stipulated in the above table will be considered on a case-by-case basis provided they are accompanied by a submission from the applicant, justifying on technical or operational grounds the use of powers as requested. Normally, such powers may be authorized only in areas where frequency congestion is not acute.

150.050 - 174 MHz Fixed Point-to-Point Circuit Categories

1.4.11 Fixed (point-to-point) links fall into the following categories:

a) circuits using not more than a 30 kHz channel and

b) circuits using a total radiated bandwidth greater than 30 kHz.

Licensing Conditions

1.4.11.1

a) Appropriate frequencies for category a) circuits may be assigned in all areas at the discretion of regional and district offices, provided that frequency needs of the land mobile service for expansion are considered.

b) Technical acceptability of the proposed systems in accordance with the applicable requirements of Radio Standards Procedure 101.

c) Licensing to be on a secondary non-interference basis to land mobile radio service.

***

d) It may not be possible to authorize fixed systems in the land mobile bands in certain areas due to frequency congestion and they must be completely justified in other areas.

Licensing Conditions for over 30 kHz Bandwidth Applications

1.4.11.2 Applications for licences for category b) point-to-point communication systems may be considered in the following order:

i) up to 12 voice channels resulting in a circuit having a total radiated bandwidth of not more than 120 kHz in each direction; and

ii) more than 12 voice channels resulting in a circuit bandwidth in excess of 120 kHz to be treated on a special case basis.

1.4.11.3 Frequency allocations have been made for low and medium capacity multi-channel point-to-point radio systems above 890 MHz. Therefore such systems, operating in the 150.05 - 174 MHz band which are presently licensed in frequency congested areas, may be required by the Department, at some future date, to change to a higher frequency band.

406.1-430 MHz and 450-470 MHz Licensing Conditions ***

1.4.12

a) Equipment used for fixed or land mobile systems must comply with the following applicable technical standards and procedures.

RSS119, RSS120, RSS121, RSP100, RSP101, SRSP501, and RSS201 for Paging Receivers.

*** b) Channel assignments shall be in accordance with SRSP501 and 1.4.12.2. The preferred type of usage is the two frequency system except for those sub bands shown in 1.4.12.2.

*** c) Fixed services may be permitted in the land mobile portions of the bands on a secondary non-interference basis, subject to future policy restraints.

*** d) Single frequency intra system operations may be permitted in the base portions of the land mobile duplex bands on a secondary non-interfrence, no protection basis to the primary two-frequency service.

*** e) Frequencies for UHF circuit categories b) and c) of 1.4.12.1 are generally assignable outside frequency congested areas. Category c) circuits are assignable on a special case basis only, subject to future policy restraints.

*** f) Radio Paging and other one way communication systems will be assigned on a shared primary basis as the two-way Land Mobile Service in single frequency bands only.

*** g) Test and demonstration, temporary RCCMRS, and special frequencies listed in this manual, plus other long standing frequencies assigned prior to the implementation of SRSP 501 and which have been cleared on a Canada-wide basis and successfully coordinated, will be maintained and integrated with current assignments.

*** h) The effective radiated power (ERP) shall be governed by the system requirements and shall not exceed that necessary to provide the required service and not to exceed 125 watts for base and fixed stations and 30 watts for mobiles.

*** i) The bands 450-451 and 455-456 MHz are allocated to the broadcast auxiliary service (Broadcast pick-up, studio transmitter links, etc.), channelling may be 25, 50 or 100 kHz.

Fixed Point-to-Point Circuit Categories

1.4.12.1 Fixed (point-to-point) circuits fall into the following categories:

*** a) circuits in the metropolitan areas using only one voice channel per R.F. channel and not exceeding a necessary bandwidth of 16 kHz in each direction, may be authorized in the primary fixed bands as set out in Appendix J.

b) circuits using up to 6 voice circuits and a total radiated bandwidth of not more than 90 kHz in each direction are permitted in areas of moderate and light mobile use as designated in appendix J.

c) circuits using more than 6 voice circuits and bandwidths in excess of 90 kHz in each direction are not normally assignable and will be dealt with on a case by case basis.

1.4.12.2
***

CHANNELING PLAN FOR ASSIGNMENTS OF FREQUENCIES TO LAND MOBILE AND FIXED SERVICE SYSTEMS IN THE 406.1 - 421 MHz BAND (25 kHz SPACING)

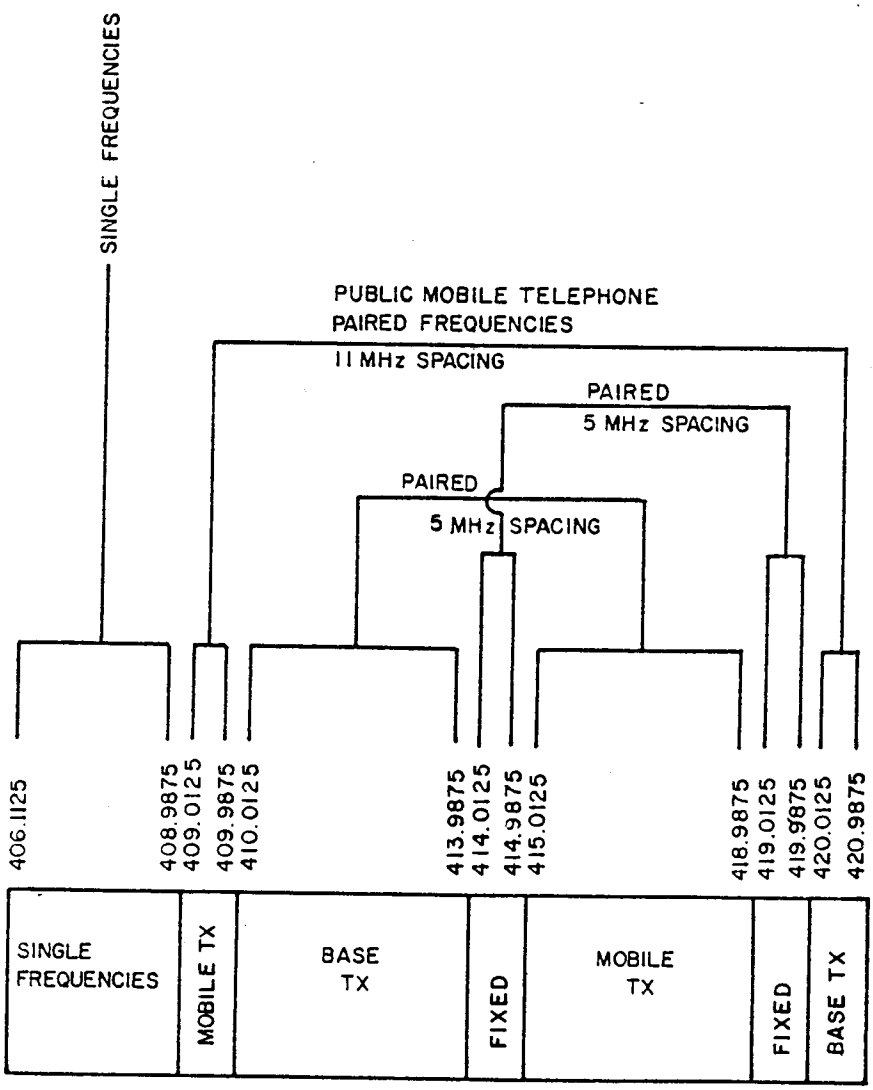
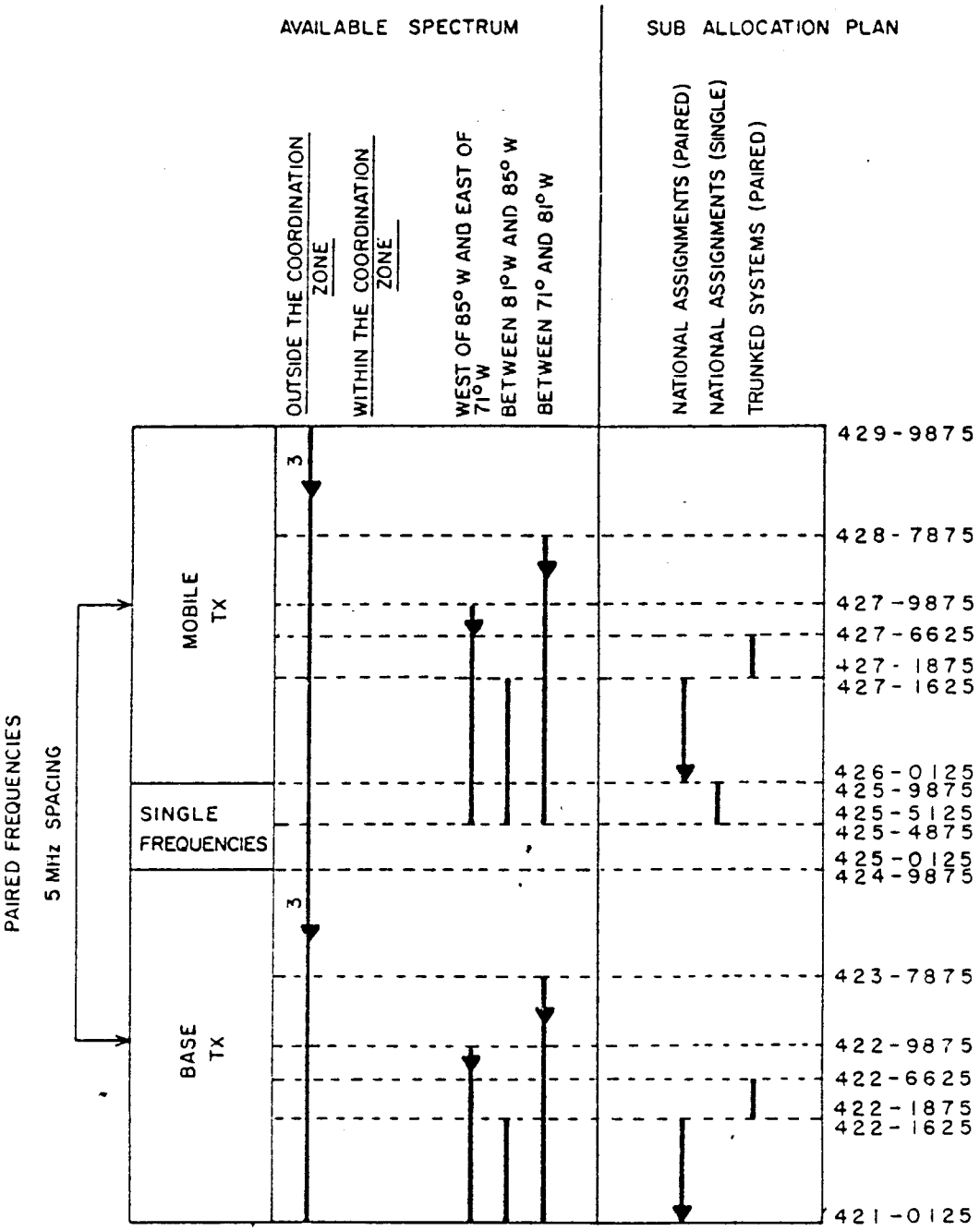


FIGURE 1

R57 12.10.82

FIGURE 2

SPECTRUM AVAILABILITY AND ASSOCIATED SUB ALLOCATION AND CHANNELLING PLAN IN THE BAND 421 - 430 MHz

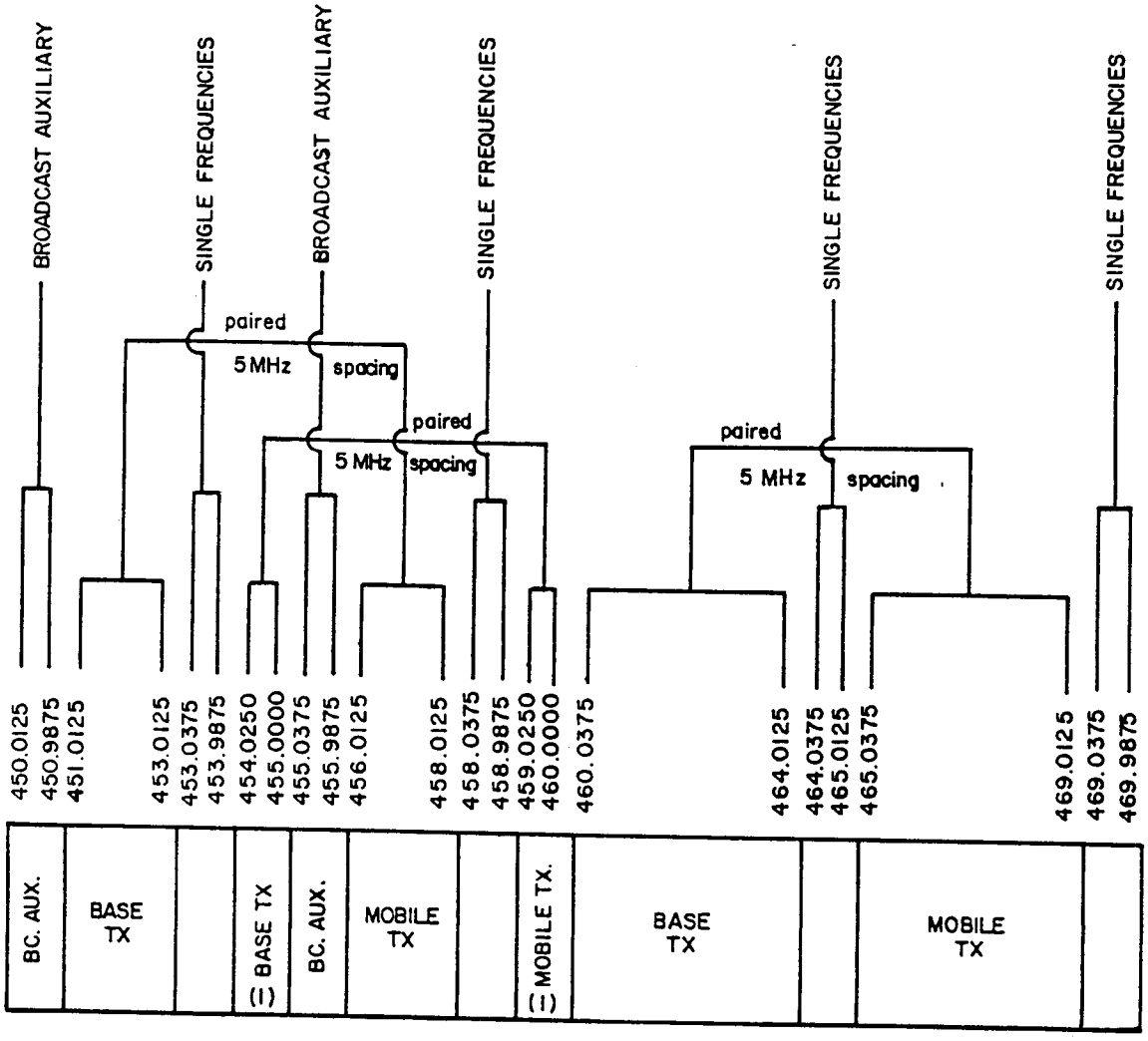


1) THE BARS ILLUSTRATE THE SPECTRUM AVAILABILITY AND SUBALLOCATION FOR CANADA.

2) THE BAND 420 - 430 MHz IS NOT AVAILABLE FOR ASSIGNMENT IN THE YUKON TERRITORY WITHIN 250 km OF THE ALASKA BORDER.

3) THE ARROWS ILLUSTRATE THE DIRECTION OF GROWTH. SUCCESSIVE ASSIGNMENTS START AT THE UPPER END OF THE ALLOTMENT UNLESS OTHERWISE STATED BY ASSIGNING AUTHORITY.

CHANNELING PLAN FOR ASSIGNMENTS OF FREQUENCIES TO LAND MOBILE SYSTEMS IN THE 450 - 470 MHz BANDS (25 kHz SPACING)



NOTE: ALL CHANNELS OFFSET 12.5 kHz FROM U.S. CHANNELS EXCEPT (1)

Figure 3

DUPLEX

*** 409.0125 - 409.9875 MHz paired with 420.0125 - 420.9875 MHz
410.0125 - 413.9875 MHz paired with 415.0125 - 418.9875 MHz
414.0125 - 414.9875 MHz paired with 419.0125 - 419.9875 MHz (Fixed)
421.0125 - 424.9875 MHz paired with 426.0125 - 429.9875 MHz
451.0125 - 453.0125 MHz paired with 456.0125 - 458.0125 MHz
454.0250 - 455.0000 MHz paired with 459.0250 - 460.0000 MHz
460.0375 - 464.0125 MHz paired with 465.0375 - 469.0125 MHz

SINGLE FREQUENCY (PRIMARY)

406.1125 - 408.9875 MHz
425.0125 - 425.9875 MHz
453.0375 - 453.9875 MHz
458.0375 - 458.9875 MHz
464.0375 - 465.0125 MHz
469.0375 - 469.9875 MHz

BROADCAST AUXILIARY

(Single Frequency or Duplex)

450.0125 - 450.9875 MHz
455.0375 - 455.9875 MHz

*** A block allocation agreement has been made with the United States in the interest of equal sharing of the bands 406.1-410 MHz and 420-430 MHz in the border sharing areas (see appendix H). The blocks and geographic areas are given below. Outside these areas all frequencies in the bands are available for allocation except for certain regional restrictions.

SINGLE FREQUENCY

All border areas on a coordination basis with U.S.
406.1125 to 406.1625; 406.4875 to 406.6625 and 408.9875 MHz.

All of Canada except the Yukon Territory within 250 Km of U.S.
425.5125 to 425.9875 MHz.

DUPLEX

West of 85° W. and East of 71° W.
409.0125 to 409.9875 paired with 420.0125 to 420.9875 MHz and
421.0125 to 422.9875 paired with 426.0125 to 427.9875 MHz.

Between 81° W. and 85° W.
409.0125 to 409.9875 paired with 420.0125 to 420.9875 MHz and
421.0125 to 422.1625 paired with 426.0125 to 427.1625 MHz.

Between 71° W and 81° W.
409.0125 to 409.9875 paired with 420.0125 to 420.9875 MHz and
421.0125 to 423.7875 paired with 426.0125 to 428.7875 MHz.

Note: **No assignments in the band 420.000 to 430.000 MHz are permitted in the Yukon Territory within 250 Km of the Alaska border.**

Guidelines

*** 1) Channel spacing is a maximum of 25 kHz.

2) The figures in the diagram represent assignable frequencies and not band edges.

*** 3) The primary service is the Land Mobile Service with the exception of the portions 414.0125 - 414.9875 MHz and 419.0125 - 419.9875 MHz which are allocated to fixed services on a primary basis. Fixed services are also permitted in other portions of the band on a secondary non-interference basis. (See also paras. 1.4.11 and 1.4.12.1).

*** 4) The dominant preferred type of usage is the two-frequency method, except in the single frequency bands illustrated in the accompanying diagram.

5) Special blocks of spectrum are allocated for base transmit frequencies; other blocks are allocated for mobile transmit frequencies only.

6) Where a central repeater station takes the place of a normal base station, licensing is permitted; this repeater shall then be treated for frequency purposes as a base station.

*** 7) Single frequency systems shall have primary status in the bands 406.1-408.9875, 425.0125-425.9875, 453.0375-453.9875, 458.0375-458.9875, 464.0375-465.0125 MHz and 469.0375 - 469.9875 MHz. In addition, between 451.0125 - 455.0000 MHz and 460.0375-464.0125 MHz simplex systems are permitted on a secondary, non-interference, no protection basis to the primary two-frequency service.

*** 8) The 409-410 MHz band paired with the 420-421 MHz band has been allocated to medium capacity mobile Radiotelephone systems. Interstitial channels are allowed if warranted.

*** 9) The band 421.000-422.175 MHz paired with 426.000-427.175 MHz has been sub-allocated for National Paired Frequency requirements (see para. 1.44).

*** 10) The band 425.500 to 426.000 MHz has been suballocated for National Single Frequency requirements (see para. 1.44).

*** 11) In addition to the land mobile service, the band 406.1 to 410 MHz is also allocated on a primary basis to the radio astronomy service. The radio astronomy observatories are located at Algonquin Park in Ontario and near Penticton in British Colombia. A description of the protection given, is in Appendix F.

*** 12) The band 420-430 MHz is shared between the Canadian Fixed and Mobile Servies and the United States Radiolocation Service. During periods of emergency, the Fixed and Mobile Services in Canada may suffer interference from the U.S. Radiolocation Service. Due to this situation, essential Fixed and Mobile radio services which cannot tolerate such disruption, should not plan to use this band.

*** 13) The band 422.175 to 422.675 MHz paired with the band 427.175 to 427.675 MHz is allocated for trunked radio systems requirements. This band provides for four systems per area with a maximum of five channels each.

*** 14) Close spaced duplex sytems are allowed on a secondary basis in the band 406.100 to 409.000 MHz.

*** 15) Vertical loading will be employed in the bands 406.1 to 409 MHz and 421-430 MHz. Each new channel will be loaded to its minimum capacity before a new channel is assigned. Safety services will continue to have access to exclusive channels.

Interstitial Channel Criteria ***

1.4.13 Interstitial or split channels are off-set 15 kHz, in the 138-144, 148-149.9 and 150.05-174 MHz bands, and are off set 12.5 kHz in 406.1-430 and 450-470 MHz bands.

1.4.13.1 In order to make maximum use of these bands, interstitial frequencies should be assigned in accordance with the following procedures:

a) interstitial channels may be assigned on a regular basis provided 35 miles separation is available from the primary 25 or 30 kHz channels, and equipment is type-approved under RSS119;

b) district offices may assign, at their discretion, interstitial channels with geographical separations less than 35 miles where compatible;

c) primary channels becoming available for re-assignment in an area where the interstitial channels are in use, should be assigned subject to the same criteria applied to the interstitial channels;

d) proposed assignments within the Canada/USA co-ordination zone will require co-ordination in line with the relevant agreement; and

e) lower effective radiated power, lower antenna heights, terrain shielding and directional antennae, to reduce and/or shape areas of operation, would optimize the use of both primary and interstitial channels subject to tests to determine if interference is caused to any of the channels involved.

UHF Bands

1.4.13.2 For further guidance SRSP501 should be consulted for the technical parameters.

806-821 MHz
851-866 MHz
Licensing Conditions
***

1.4.14

a) Equipment used for fixed or land mobile systems must comply with the following technical standards and procedures.

RSS 119 and supplement, RSP 101, RSP 100 and SRSP 502.

b) Channel assignments shall be in accordance with SRSP 502 and 1.4.14.1.

c) Fixed services may be permitted in the land mobile portions of the bands on a secondary non interference basis only outside of the cities listed in appendix J, subject to future policy restraints.

d) Single frequency intra system operations may be permitted in the base portions of the land mobile duplex bands on a secondary non interference, no protection basis to the primary two frequencies.

e) Licensing of systems, where a repeater station takes the place of a normal base station, is permitted. This repeater shall be treated for frequency purposes as the base station.

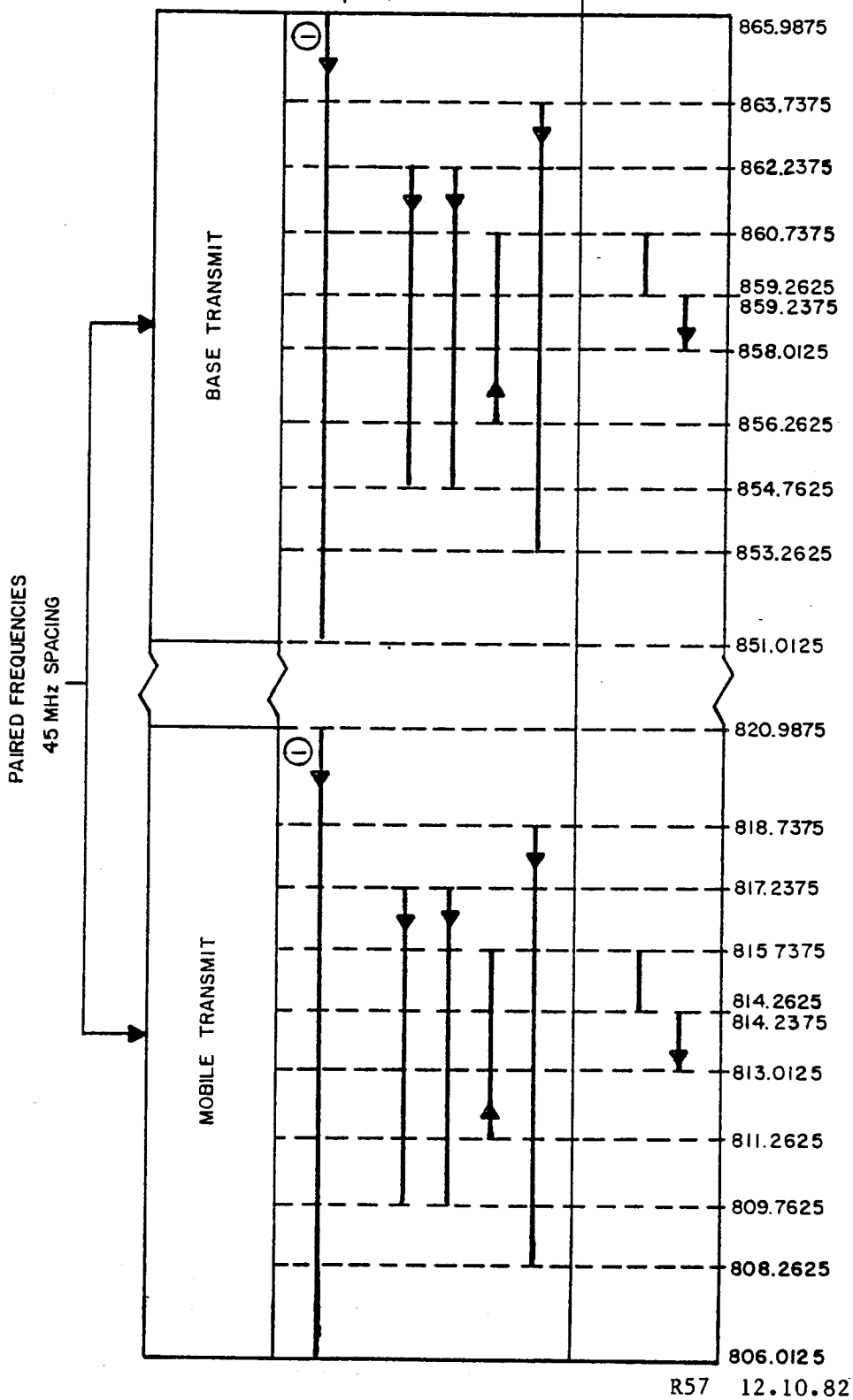
f) Test and demonstration and temporary frequencies will be listed in this manual at a later date.

g) The effective radiated power (ERP) shall be governed by the system requirements and shall not exceed that necessary to provide the required service. The maximum ERP for base and fixed stations is limited to 125 watts; for mobile stations 30 watts.

FIGURE 1(a)

SPECTRUM AVAILABILITY AND ASSOCIATED SUB ALLOCATION AND CHANNELLING PLAN

IN THE BANDS 806 - 821 AND 851 - 866 MHz



THE BARS ILLUSTRATE THE SPECTRUM AVAILABILITY AND SUBALLOCATION FOR CANADA

① THE ARROWS ILLUSTRATE THE DIRECTION OF GROWTH. SUCCESSIVE ASSIGNMENTS START AT THE INDICATED END OF THE ALLOTMENT UNLESS OTHERWISE STATED BY ASSIGNING AUTHORITY.

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A Block Allocation Agreement has been made with the United States in the interests of equal sharing of the bands 806.000 to 821.000 MHz and 851.000 to 866.000 MHz on a demographic basis. The blocks and related geographic areas are shown below. (for sharing areas see Appendix G) Outside the areas all frequencies are available for allocation.

Canada Wide - Outside the sharing zones.

806.0125 to 820.9875 MHz paired with 851.0125 to 865.9875 MHz.

Yukon Territory - BC/Alaska border.

809.7625 to 817.2375 MHz paired with 854.7625 to 862.2375 MHz.

West of 85° W and East of 71° W.

809.7625 to 817.2375 MHz paired with 854.7625 to 862.2375 MHz.

Between 81° W. and 85° W.

811.2625 to 815.7375 MHz paired with 856.2625 to 860.7375 MHz.

Between 71° W. and 81° W.

808.2625 to 818.7375 MHz paired with 853.2625 to 863.7375 MHz.

NOTE: In the protection zone, the frequency assignments are the same as for outside the sharing zones except that there are power and height restrictions and special coordination may be initiated.

Guidelines

1) Channel spacing is a maximum of 25 kHz wide.

2) Channel spacing starts and ends 12.5 kHz from the band edges, as shown above.

3) Channel allocation blocks are assigned to geographical areas as shown above.

4) The primary service within these bands is the Land Mobile Service.

5) The preferred type of usage in this band is the two frequency method using vertical frequency loading.

6) The base transmit frequencies are in the Channel allocation blocks between 851.000 and 866.000 MHz; the mobile transmit frequencies are in the Channel allocation blocks between 806.000 and 821.000 MHz.

7) Licensing of systems, where a central repeater station takes the place of a normal base station, is permitted; this repeater will then be treated for frequency purposes as a base station.

8) Except as in 9 & 10 all remaining portions of the bands 806.000 to 821.000 MHz and 851.000 to 866 MHz are assignable for appropriate uses on a regional or district level within the restrictions of the geographic block allocations.

9) The band 813.000 to 814.250 MHz paired with 858.000 to 859.250 MHz is sub allocated to accommodate ten systems of 5 channels in each given area for trunked radio systems. A trunked radio system is that in which the channel selection from the 5 channels is made automatically.

10) The band 814.250 to 815.750 MHz paired with 859.250 to 860.750 MHz is sub allocated on a Canada wide basis for users of sytems with a national or geographically extensive requirements (see para. 1.44).

11) In general; the upper portion of the band will be assigned prior to lower portion of the band except between 81° W. & 85° W. along the Canada U.S. border where initial assignments will be from the lower portion of the band.

12) Vertical loading will be employed in these bands. Each new channel will be loaded to the prescribed minimum before a new channel will be assigned. Public safety services will continue to have access to exclusive channels.

Technical Requirements ***

1.4.15 Under RSS119, and its supplement, type-approval is required for all land and mobile equipment, primarily voice-modulated FM or PM, operating in allocated bands between 27.41 and 890 MHz. Fixed FM/PM (point-to-point) equipment is evaluated under RSP100, using RSS119 as a guide. For FM/PM portable transceivers 10 watts and under, RSS121 is to be used as a guide. Low power AM/FM mobile equipment may be type approved under RSS120. SSB equipment is to be evaluated under RSP100, using RSS136 as a guide.

Overlap Areas ***

1.4.16 As a result of Block Allocation Agreement, portions of the allotted frequency bands overlap. Assignments of these frequencies in the overlap areas must be co-ordinated with the U.S. For details regarding the overlap areas and the frequencies concerned see Appendix I.

Radio Receiving Equipment - Land Mobile Service

1.5 All receiving equipment used in the land mobile service, unless specifically exempted under the appropriate section of the Radio Regulations, is subject to licensing. In general, such radio receiving apparatus falls within one of two categories: in the first category the equipment is used in conjunction with a transmitting facility, and forms an essential part of a two-way communication system; in the second category the receiving apparatus is used for one-way communication or monitoring only.

Technical Requirements - Receiving Equipment

1.5.1 Radio receiving equipment falling within the first category mentioned above is required to be type-approved in accordance with the technical specification appropriate to the class of service being performed. Receiving equipment falling within the second category is required to be technically acceptable in accordance with RSP100.

Speech Scrambling Equipment the Mobile Service

1.6 Regional offices may give favourable consideration to applications from licensees of private land mobile systems to employ speech scrambling equipment for privacy of communications provided that:

1) the proposed speech scrambling equipment is capable of both clear and scrambled speech transmissions;

2) the use of the proposed equipment will not degrade the operation of the transmitter; and

*** 3) the applicants use the clear speech mode for calling and identification of both base and mobile stations.

1.6.1 Applications for the use of speech scrambling equipment shall be supported by complete technical data of the equipment involved.

Walkie-Talkie Equipment

1.7 The following criteria may be applied in defining radio equipment of "Walkie-Talkie" type licensable as mobile stations:

a) low-powered (hand carried) self contained units, i.e., transceivers containing power supply and antenna (small whip) as an integral part of the unit; and

b) where such units are not normally operated from predetermined fixed locations and are capable of operation while in motion.

Inter-connection with Telephone Networks

1.8 The Radio Act and General Radio Regulations neither permit nor prohibit the interconnection of private mobile radio systems to the landline telephone sytems, therefore, the Department is not directly concerned. Such interconnection depends upon the local telephone company and the licensee, arriving at a mutually acceptable arrangement.

1.8.1 The Department is primarily concerned, that the licensee of the radio station maintains control of the facility to the extent required to ensure conformance with the technical and operational provisions of the specific radio station licence involved and those of the Act and Regulations, e.g., power, bandwidth, emission, non-interference, etc.

Portable Security Alarm

1.9 Licences may be granted for the operation of low power portable alarm transmitters at jails, penitentiaries, asylums and other correctional institutions. The transmitting device is carried by guards and can be activated to signal a central monitoring location of alarm situations that are encountered in the institution.

Eligibility

1.9.1 Federal, Provincial and Municipal Agencies.

Technical

1.9.2 The frequency 173.475 MHz is assigned for this purpose subject to the following technical conditions:

a) the RF power output shall not exceed 1 watt; and

b) the equipment shall be technically acceptable under Radio Standards Procedure 100 using Radio Standards Specification 120 as a guide.

Radio Paging-Definition

1.10 A one-way signalling communication service (tone and/or voice) provided by the licensee's land (base) station. The signal is used to activate mobile receivers operated by persons employed by or associated with the licensee.

Eligibility

1.10.1 Pursuant to the Radio Act and General Radio Regulations any individual or company requiring a radio paging service as defined in 1.10 may apply for licences for that purpose.

Radio Paging Bands ***

1.10.2 Certain discrete frequencies for radio paging are available in the 26, 27, and 149 MHz bands. Frequencies are also available in the 30-50, 148.0-149.90, 406.1-409, 421-430 and 450-470 MHz bands, on a shared secondary basis to the land mobile service, as well as those available in the 15-200 kHz band for building loop systems. For applicants proposing a private radio paging service in addition to a land mobile service, the Department will authorize private paging in the bands 27.41-50.00, 148.0-149.9, 150.05-174.0, 406.1-409, 421-430 and 450-470 MHz as an adjunct to a normal 2-way system, on a <u>shared</u> secondary basis to the land mobile service.

Paging Frequencies Available

1.10.3 For applicants proposing a service of private radio paging only:

a) Low Frequency Building Loop Systems - frequencies in the 15-200 kHz band are available for low frequency building loop systems with a maximum power input of 30 watts to the final amplifier stage feeding each loop in the system.

b) 27 MHz systems - the following frequencies are available for systems with a maximum power input of 5 watts to the final amplifier stage.

MHz
27.045
27.095
27.145
27.195

c) 26, 27 and 30 MHz systems- the following frequencies are available for systems with a maximum power input of 30 watts to the final amplifier stage.

MHz	MHz	MHz
26.535	27.560	30.020
26.545	27.760	30.220
26.555	27.960	30.420
26.565		
26.575		

In addition the following four frequencies have been approved for assignment to private radio paging operations in congested areas subject to favourable co-ordination where applicable.

MHz	MHz
31.42	32.42
31.92	33.92

Note: Licensees now operating on 27.235, 27.245, 27.255, 27.265 and 27.275 MHz have the option of continuing to use these frequencies on the basis of no protection from GRS stations.

d) VHF Systems - the following frequencies are available for systems, with a maximum ERP of 125 watts, subject to favourable co-ordination with the United States.

MHz
149.020
149.290

e) In addition, frequencies in the bands 30-50 MHz, 148-149.9 MHz and 450-470 MHz are available on a shared secondary basis to the land mobile service.

1.10.3.1 For applicants proposing a service of private radio paging in addition to a land mobile service:

Private radio paging is permitted in the bands 27.41-50 MHz, 148.0-174.0 MHz and 450-470 MHz as an adjunct to a normal two-way system on a shared secondary basis to the land mobile service.

Talk-Back Facilities

1.10.4 Paging talk-back facilities should be treated in the same manner as other low power two way communication services and subject to the same policies, procedures, technical criteria, licence fees, etc.

Assignment of Paging Frequencies

1.10.5

a) Applicant should be encouraged to employ frequencies in the bands 15-200 kHz, 26 MHz and 27.41-50 Mhz for private paging services.

b) Frequencies in the bands 15-200 kHz shall be assigned on a shared no protection basis, and no interference shall be caused to other radio services.

*** c) Frequencies in the bands 27.41-50 MHz, 148.0-174.0 MHz, 406.1-409, 421-430 and 450-470 MHz shall be assigned on a shared secondary basis to the land mobile service.

d) Frequencies in the band 150.8-174.0 MHz are not available for applicants proposing a system of radio paging only.

Technical Requirements - Private Paging

1.10.6 Equipment operating in the 15 - 200 kHz band - evaluation under RSP100 using RSS117 as a guide. Equipment operating in the bands between 26.53 and 470 MHz - evaluation under RSP100 using RSS119 (FM) or RSS140 (AM) as a guide. For low power AM/FM equipment RSS120 to be used as a guide. Types of emission - AM or FM are permitted.

Power - For systems authorized on a shared secondary basis to the land mobile service the power employed shall not exceed that permitted in the land mobile service.

Type approved equipment in use by paging licensees in the 27 MHz band prior to GRS expansion is considered as acceptable for licensing when licensees choose to relocate to one of the five frequencies selected for paging in the 26 MHz band.

Paging Receivers

1.10.6.1 Receivers approved in accordance with Radio Standards Specification 201 are exempt from licensing.

General

1.10.7 Where coded signal tones are used they shall be selected by licensees and co-ordinated when necessary with other licensees in the same area to ensure compatibility of operation.

1.10.7.1 When the base station transmitting frequency is shared with other users in the area, the licensee will be required to monitor that channel at all times.

1.10.7.2 Paging transmissions shall be of short duration and in general must not impede or cause harmful interference to regular two-way land mobile service on any R.F. channel.

Electronic Distance Measuring Equipment (Tellurometer)

1.11 Electronic distance measuring equipment known as "Aerodist" and "Micro-distancer" are now being licensed in Canada. This distance measuring equipment normally consists of one master station and one or more remote stations, each mounted on a tripod and readily transportable. The antenna is mounted on a self contained parabolic reflector and power is derived from a storage battery. The power outputs of such equipment vary from 100 milliwatts to 3.2 watts.

1.11.1 The Department will examine applications proposing the use of distance measuring equipment in the frequency bands 1215-1400 MHz, 2800-3200 MHz, 10.10-10.45 GHz and 33.40-36.00 GHz; such applications will be considered on a case-by-case basis and each proposal examined on its merits, taking into account the low power of the equipment involved as well as the limited period of operation normally required. The use of frequencies within these bands will be co-ordinated with other users where the need exists.

1.11.2 When authorized, the operation of distance measuring equipments shall be subject to the following conditions:

1) Electronic distance measuring equipment shall operate on the basis of non-interference to the operation of military stations of all categories, civil microwave systems, radionavigation and radiolocation systems; and

2) Operation of such apparatus shall not be afforded any protection from interference or physical damage caused by transmissions of other stations.

Technical

1.11.3 Distance measuring equipments shall be technically acceptable in accordance with information required under Radio Standards Procedure 100.

Radar for Railway Automatic Retarder Control Systems

1.12 Low power radar has been developed for car retarder speed control in railway yards. In railway hump yard operations, use is made of an automatic retarder control system in sorting or classifying cars moving from a main track to one or more classification yards consisting of groups of tracks. Radar units placed at or near each retarder measure the speed of approaching cars. The information obtained is delivered to an electronic calculating machine, located in the retarder control tower, where combined with other data i.e., weight, track clearance, etc., it is used to exercise control of retarders to ensure that each car enters the classification track at the appropriate speed.

1.12.1 The licensing of such low power units for automatic retarder control has been approved on the basis of

1) frequency of operation, 10,525 MHz;

2) no interference caused to other radio services; and

3) no protection from future operations on the same frequency.

1.12.2 Each radar unit in a group of such units will be considered a separate station and will be licensed under a land station, private commercial service licence.

Low Power Wireless Camera ***

1.13 Low power cameras have been developed for use on the VHF and UHF TV channels for other than broadcasting purposes. Such cameras have been found useful for monitoring various industrial or agricultural processes.

This equipment may be licensed on a case-by-case basis provided that interference is not caused to TV broadcasting.

The following criteria should be considered when assessing applications for the use of such equipment.

1) availability of appropriate channels (i.e., channels that are not already in use in the area);

2) equipment meets our technical requirements based on RSP 100; and

3) Visual power output rating up to 200 milliwatts PEP for VHF TV channels and up to 500 millwatts for UHF TV channels.

4) every application should be assessed on individual merits and each case should not be used as a precedent in respect of future applications.

Radio Whistles

1.14 Radio whistle equipment which is used in logging operations generally consists of a VHF-FM low power portable transmitter and mobile type receiver with associated antennae and power supplies. It employs audio frequency modulating tones, encoded at the transmitter and decoded at the receiver, to perform a remote control function. Considering that the "Radio Whistle" service is an industrial operation, the Department is concerned only to the extent of ensuring that "Radio Whistle" stations are properly licensed in accordance with the Radio Act and General Radio Regulations made thereunder.

Frequencies

1.14.1 The following frequencies may be assigned for such systems:

165.450 MHz	167.550 MHz	170.550 MHz
166.140 MHz	168.090 MHz	

Provided that the

1) applicants submit a letter from responsible representatives of the forest industry in the area concerned, such as the Council of Forest Industries (CFI) in the province of British Columbia (where the requirement for such use of these frequencies exists) to the effect that the audio tones have been coordinated and that the proposed frequency assignment is acceptable with respect to other users in the area concerned;

2) transmitters in this service operate with an r.f. power not to exceed 500 milliwatts; and

3) DOC is not involved in the regulation of audio tone encoding controls on radio circuits either at the time of licensing or in changes that may be made after a licence has been issued.

Technical

1.14.2 Equipment shall be of a make and model which is technically acceptable in accordance with the information required under RSP 100. It should be emphasized that the Department does not recognize "Radio Whistle" systems as coming within the land mobile safety service category. The five frequencies referred to are made available to "Radio Whistle" systems without protection from possible interference by other operations in urban areas. However, the Department will not assign these frequencies to other radio services in areas where "Radio Whistle" operations are anticipated.

1.14.3 Specific applications for the use of AM transmissions in connection with the signalling operations may be authorized by Regional or District Offices.

Frequencies Communication Connection Logging Operations (Log Grappling)

1.15 The following UHF frequencies have been co-ordinated with the United States and cleared for use by the Logging Industry in British Columbia, for log grappling operations:

MHz	MHz
469.1375	469.675
469.1625	469.775
469.2375	469.875
469.575	469.975

and subject to the conditions

1) The department is only concerned to the extent of ensuring that "Log Grappling" stations are properly licensed in accordance with the Radio Act and General Radio Regulations made thereunder. The department is not responsible for the actual audio tones used for control purposes and arrangements similar to those in effect for the co-ordination of tones used by radio whistles (para. 1.14.1 should suffice;

2) that applications proposing the use of such frequencies shall carry the notation that the frequency or frequencies involved have been co-ordinated within the Industry;

3) that the transmitter power employed in log grappling operations shall not exceed 250 milliwatts; and

4) that the equipment is technically acceptable in accordance with RSP100.

Frequencies for "Fire-Line" Communication Purposes

1.16 The frequencies 26.92, 26.95 and 46.74 MHz are available for assignment to forest fire protective agencies for "fire-line" communication purposes on a Canada-wide basis.

1.16.1 The use of the frequency 46.74 MHz is subject to co-ordination with the United States authorities if the power to be used exceeds five watts ERP.

Remote Control Operations other than Remote Control of Models

1.17 The definition of Private Commercial Service has been expanded to include stations used to control mechanical objects or devices for industrial purposes. Therefore, stations providing a service of remote control other than the remote control of models may now be licensed in the Private Commercial Service.

1.17.1 Frequencies are available in the industrial scientific and medical (ISM) bands, the 200-415 kHz band and the 72-76 MHz band for remote control purposes.

ISM Bands ***

1.17.1.1

Lower Frequency Limit of Band (Megahertz)	Centre Frequency (Megahertz)	Upper Frequency Limit of Band (Megahertz)
13.5532	13.5600	13.5667
26.9573	27.1200	27.2827
40.6597	40.6800	40.7003
902.0000	915.0000	928.0000
2,400.0000	2,450.0000	2,500.0000
5,725.0000	5,800.0000	5,875.0000
24,000.0000	24,125.0000	24,250.0000
61,000.0000	61,250.0000	61,500.0000
122,000.0000	122,500.0000	123,000.0000
244,000.0000	245,000.0000	246,000.0000

200-415 kHz Band

1.17.1.2 Frequencies in this band may be used for remote control purposes on a non-interference, no protection basis to existing or future assignments of the primary service (Radionavigation).

72-76 MHz Band

1.17.1.3 A number of frequencies in the 72.02-72.98 MHz and the 75.42-75.98 MHz portions of this band may be used for remote control purposes. Refer to paragraph 1.4.5 of PM-1-4 for further licensing details applicable to this band.

Technical Requirements

1.17.2

a) In the case where an applicable final or provisional Radio Specification is in effect the equipment shall be type approved under that Specification.

b) In the case where an applicable draft Radio Standards Specification has been released, the equipment shall be technically acceptable under Radio Standards Procedure 100, in accordance with that Specification.

c) In the case where no applicable draft Radio Standards Specification has been released, the equipment shall be technically acceptable under Radio Standards Procedure 100, using the closest pertinent Specification as a guide.

Exempt Remote Controls

1.17.3 It should be noted that controls for the remote operation of radio and television receivers are exempt from licensing in accordance with 6(1)(f) of the General Radio Regulations, Part II (refer also to paragraph 2.2.7 of PM-1-7).

Remote Control of Traffic Lights

1.17.4 Equipment is available for the remote control of traffic lights for use at road construction and road repair sites. This equipment has been designed for operation on the off-set frequency 151.090 MHz and may be licensed on a no-protection non-interference basis.

Technical Requirements

1.17.4.1 Equipment is to be technically acceptable under RSP 100.

Allocation of Frequencies in the Band 403-420 MHz

1.18 A review of the allocation of frequencies in the band 403-420 MHz has rendered the following situation:

* 403-406 MHz - In hospital telemetry,

406-406.1 MHz - Mobile-satellite (earth to space),

*** ** 406.1-410 MHz - Radio Astronomy and land mobile

*** 410-420 MHz - Fixed
Mobile (except aeronautical mobile).

* Available for in-hospital telemetry, shared with Meteorological Aids on a non-interference basis.

*** ** 406.1-410 MHz is shared on a coequal primary basis between Land-mobile and Radio Astronomy with protection given to existing Radio Astronomy systems.

*** *** Guidelines for the assignment of frequencies in the bands 406.1-430 MHz and 450-470 MHz are contained in other sections of PM-1 dealing with frequency plans.

Private HF SSB Province-Wide Radio Communication Systems

1.19 From time to time, various Regional Offices have suggested that one specific HF channel be set aside for use by SSB systems to be established by small businesses having a legitimate requirement for province-wide communication service.

1.19.1 It has been decided that, for the present, proposals of this nature shall continue to be handled on a case-by-case basis. This, however, does not preclude the applicant from requesting or Regional Office from approving the assignment of a specific frequency in any particular instance.

1.19.2 Frequency assignments for private operations of this nature are subject to two basic conditions

1) licensees must be prepared to share in the use of the frequency or frequencies assigned; and

2) the authority granted is subject to withdrawal at the discretion of the Department if it is necessary to do so in order to meet the requirements of services of a higher priority category.

Applicants for HF SSB channels for private communication systems should be made aware of these conditions and, where considered necessary, should be required to indicate to the Department their acceptance prior to licensing.

Auxiliary Service to Broadcasting 26-470 MHz

1.20 This service includes low power auxiliary circuits, such as studio transmitter links, broadcast pickup facilities, control circuits, studio cueing devices, wireless microphones and similar applications.

Eligibility

1.20.1 Licensees of broadcasting undertakings.

Frequencies Available 1.20.2

MHz

1) 26.110 26.210 26.310 26.410
26.130 26.230 26.330 26.430
26.150 26.250 26.350 26.450
26.170 26.270 26.370 26.470
26.190 26.290 26.390

2) Frequencies in the bands 72.02 - 72.98 MHz and 75.42 - 75.98 MHz are also available as indicated in 1.20.4.

MHz

3) 152.870 153.050 153.230
152.930 153.110 153.290
152.990 153.170 153.350

MHz

4) 166.250
170.150

MHz

5) 172.680 172.830
172.740 172.890

6) 450.050 450.550 455.050 455.550
450.100 450.600 455.100 455.600
450.150 450.650 455.150 455.650
450.200 450.700 455.200 455.700
450.250 450.750 455.250 455.750
450.300 450.800 455.300 455.800
450.350 450.850 455.350 455.850
450.400 450.900 455.400 455.900
450.450 450.950 455.450 455.950
450.500 455.500

Assignment of Frequencies 1.20.3 The frequencies in the 26 MHz band as listed in 1.20.2, 1) are allocated for use by auxiliary services to broadcasting, including wireless microphones and studio cueing devices, subject to no protection from interference. There are a number of assignments to other services in this band; however, they are remotely located and used very sparingly so that interference to auxiliary services is unlikely.

Wireless Microphone Frequencies

1.20.4 Frequencies in the bands 72.02-72.98 MHz and 75.42-75.98 MHz are available for wireless microphones as follows:

1) frequencies to be selected and assigned on a shared no protection non-interference basis having regard to possibility of interference to the reception of TV channels 4 and 5 and to aeronautical marker beacons;

2) the transmitter RF power output is not to exceed one watt; and

3) the equipment involved is to be technically acceptable under Radio Standards Procedure 100.

1.20.4.1 The frequencies listed in 1.20.2 3) are available on the basis of 60 kHz channelling subject to the condition that no harmful interference is caused to other radio services. The assignment of these frequencies is subject to no protection from adjacent 30 kHz channel operations, however, every effort will be made to give a measure of protection by geographical spacing where possible.

1.20.4.2 The frequencies listed in 1.20.2 4) 166.25 and 170.15 MHz (off channel) are available on a Canada-wide basis for assignment only to the Canadian Broadcasting Corporation to provide auxiliary services to broadcasting with a maximum bandwidth and emission of 40F3 (40K0F3E) and a power of 25 watts.

1.20.4.3 The frequencies listed in 1.20.2 5) are available primarily for auxiliary services to broadcasting on the basis of 60 kHz channelling with bandwidth and emission 40F3 (40K0F3E). However the licensees are urged to use narrow band equipment as this would double the number of frequencies that might be made available.

1.20.4.4 Licensees granted authority to use any of the four frequencies listed in 1.20.2 5) or 30 kHz channels adjacent thereto, which might be available, would be required to relinquish any frequency previously assigned in the band 152.87-153.35 MHz.

1.20.4.5 The use of frequencies in the 172 MHz band in areas where channel 7 (TV) is received may result in slight interference to TV reception. This should be taken into account when assigning frequencies in that band.

1.20.4.6 The frequencies listed in 1.20.2 6) are available on a Canada-wide basis primarily for low power auxiliary services to broadcasting, normally on a 50 kHz channel spacing basis. However, in frequency congested areas, assignments should be made at 25 kHz channel spacing (first assignment 450.0125 kHz) provided that this will allow adequate bandwidth of emissions. Also, in non-congested areas, where it can be shown that 50 kHz channelling would not allow sufficient bandwidth, assignments may be made on the basis of 100 kHz channel spacing.

1.20.4.7 In view of the heavy usage of VHF channels in urban areas relative to the increasing need for auxiliary services to broadcasting, it is considered desirable to encourage the development of such auxiliary services in the UHF portion of the radio spectrum where space is available and adequate protection can be given.

Technical Requirements

1.20.5

Frequency Bands MHz	Radio Standards Procedure (RSP)
26.10 - 26.48	RSP 100 using RII Specification 204 as a guide.
72 - 76	RSP 100.
150.8 - 174 450 - 470	Generally the same as for land mobile services in those bands.

Use of Broadcast Pick-up Facilities

1.21 It has been established that licensees of broadcasting stations have a need for some type of intercommunication in a broadcast pick-up service. In some instances licensees using studio transmitter links have established a need for order wire circuits for communication between studio and transmitter buildings and have been licensed to establish such a facility on a separate frequency.

1.21.1 The use of broadcasting pick-up facilities strictly in accordance with authority granted to licensees would limit the use of the assigned frequency to a few hours a week under normal circumstances. In the interest of efficient spectrum management it would be desirable to make better use of the broadcast pick-up frequency to avoid assigning separate frequencies for intercommunication purposes.

Use of Broadcast Pick-Up Facility for Intercom

1.21.2 Therefore, in accordance with 1.21.1, it has been decided to permit licensees authorized to operate broadcast pick-up facilities, to use the frequency assigned for intercommunication not directly related to broadcast pick-up operation, provided such communication is in support of the company's broadcasting operations. Such assignments shall be on a non-interference basis to the broadcast pick-up service.

Endorsement of Licence for Intercom Use

1.21.3 Licences authorizing broadcast pick-up facilities will be endorsed to permit intercommunication as outlined above. In addition, consideration will be given to applications from licensees, authorized for broadcast pick-up, to establish land station facilities at the studio for intercommunication purposes, and where there is a demonstrated need, similar facilites may be authorized at the transmitter building.

Privately Established VOR Navigational Systems

1.22 During the past several years the Department has received applications for licensing of privately operated VOR systems in areas where such facilities are not provided by the Department of Transport. These applications have been processed on a case-by-case basis in consultation with the Civil Aviation authorities, Department of Transport.

1.22.1 Generally, the private VOR facility has been approved on the understanding that information concerning it would not be advertised, nor would it be approved for public use. Other factors which should be taken into account and of which the applicant should be made aware are as follows:

a) The Department of Transport will, only when possible, provide flight inspection services for private facilities. This would also apply should someone propose to install a private ILS facility;

b) The owner-operator of the facility must advise the Department of Transport of how it is to be aligned, maintained and monitored before any consideration could be given for its use under IFR conditions; and

c) Any IFR procedures would have to be submitted for approval, and this would depend on the answers to the points raised in b).

1.22.2 Frequencies in the band 108.2-117.9 MHz are available for VOR facilities in accordance with the Canadian Frequency Allocation/Allotment Plan for VHF Aeronautical Services. (See PM-1-2)

1.22.3 Equipment employed for VOR facilities shall be technically acceptable in accordance with information required under RSP100.

Private Aeronautical Mobile Radio Beacons (NDB)

1.23 Applications proposing the establishment and operation of private radio beacons (NDB) are dealt with on the basis that there is a valid requirement for such facilities and that departmental technical requirements are complied with. Applications for private aeronautical beacons are co-ordinated with the Civil Aviation authorities of the Department of Transport. Frequencies are selected from within the band 200-415 kHz and on the basis of a stated coverage requirement.

Private Commercial Service to Aircraft

1.24 This is a simplex radiotelephone service between aircraft and private land stations on frequencies assigned to the land station licensee for the business communications of the aircraft station licensee; such as, crop spraying, inspection of pipe lines, hydro lines, etc.

1.24.1 Applications for licensing of this type of service may be accepted subject to the following conditions:

1) The proposed apparatus shall be of a make and model which has been type approved or declared technically acceptable by the department for the purpose intended;

2) The installation of separate transmitting and receiving equipment for non-safety communications shall not cause interference to aircraft safety communications;

3) If the aircraft is <u>not</u> fitted for operation in the Aeronautical Mobile (Safety) Service the installation and operation of equipment for <u>non-safety</u> communications shall be covered by a Mobile Station Licence (Private Commercial Service) endorsed "in aircraft C....."; and

4) If the aircraft is fitted for operation in the Aeronautical Mobile (Safety) Service the complete radio installation shall be authorized by a Mobile Station Licence (Aeronautical Mobile Service), endorsed to include the appropriate non-safety communications.

Note: Aeronautical companies assigned an aeronautical mobile (R) frequency for normal air/ground communications and a fixed service frequency for point-to-point communications may be authorized to use the fixed service frequency in aircraft for non-safety communication only with low power land stations in isolated areas.

VHF/UHF Airborne Broadcast Pick-up Service

1.25 This is defined as a simplex radiotelephone service between aircraft and land broadcast pick-up stations on frequencies assigned to the licensee of a private commercial broadcasting station for broadcast pick-up purposes, e.g., the reporting of highway and traffic conditions in metropolitan areas by means of radio equipment in aircraft, or other broadcast material originating in aircraft.

Conditions of Licensing

1.25.1 Applications for licensing of this type of service may be accepted subject to the following conditions:

1) A separate unit of radio equipment shall be employed for airborne broadcast pick-up purposes;

2) Permanently installed VHF or UHF equipment shall be type approved under Radio Standards Specification 119 and the power output shall not exceed 5 Watts. Portable VHF and UHF equipments shall be type approved under Radio Standards Specification 120;

3) The airborne broadcast pick-up unit shall be limited to the use of frequencies allocated for broadcast pick-up purposes;

4) The airborne broadcast pick-up unit shall be operated only within the primary coverage area of the private commercial broadcasting station with which it is associated and restricted to operation below 2440 metres (8000 feet) above sea level;

5) The airborne broadcast pick-up unit shall be covered by a Mobile Station Licence (Private Commercial Service) and issued in the name of the licensee of the private commercial broadcasting station. Such licence to be a separate and distinct document from the aircraft station licence; and

6) No interference shall be caused by the use of the airborne broadcast pick-up unit to any of the radio apparatus which is intended for aircraft safety communications or navigational purposes.

"Walkie Talkie" and Handy Talkie Not Excluded

1.25.2 The above policy permits the installation of permanent equipment in the aircraft but does not preclude the use of portable radio equipment.

Licence to Specify Several Aircraft

1.25.3 Since aircraft used for airborne broadcast pick-up purposes are generally obtained by charter from an aircraft operating agency and since it is not always possible for the licensee of the broadcast pick-up station to obtain the same aircraft, the licence should specify several aircraft in which the portable pick-up equipment may be used.

1.25.4 Licences issued in respect of radio stations performing an airborne broadcast pick-up service shall be phrased as follows:

a) In the ..... area; or

b) In aircraft C-_ _ _ _, or C-_ _ _ _ or C-_ _ _ _ flying in the ..... area.

Walkie-Talkie Equipment Special Case

1.26 Applications for the use of walkie-talkie equipment in aircraft may be dealt with on a special case basis. Mobile station licences, if and when issued, will be endorsed to permit such operation subject to the general conditions outlined in 1.24.1, 1.25.1 and 1.27 as applicable.

Radio Equipment in Aircraft

1.27 In general, all radio equipment employed in aircraft, which has not passed environmental and in interference test procedures for airborne operation as outlined in RSS160 and 161 respectively, will be limited to operation below 2440 metres (8,000 feet) above sea level.

Airport Ground Control Communications

1.28 Radio station licences (Mobile) may be issued to authorize the installation and operation of radio equipment in vehicles for the purpose of communication with airport traffic control towers. Frequencies are available for assignment in the band 121.6 - 121.95 MHz. Such licences shall be issued only when a valid requirement exists and the vehicles involved have authority to operate within the confines of the airport.

Mobile Ground Control

1.28.1 Radio equipment employed for mobile airport ground control communications shall be technically acceptable under RSP100 using RSS140 as a guide.

Airport Ramp Control Communications

1.29 The two basic categories of airport ramp control communications are as follows:

1) Direct aircraft pilot/airport ramp controller for which an aeronautical air/ground frequency assignment is justified; and

2) Intra-plant airport low power communications - for communication between ramp controllers or other company officials and vehicles, for portable installations used for aircraft servicing, etc. For these intra-plant systems, frequencies in the bands 150.8-174 and 450-470 MHz only should be assigned.

Not to Exceed 5 Watts

1.29.1 Equipment employed at stations for direct aircraft pilot/ramp controller communications shall be technically acceptable under Radio Standards Procedure 100 with a power output not in excess of 5 Watts.

Intra-plant Communications

1.29.2 Equipment employed for low power intra-plant airport communications shall be type approved under Radio Standards Specifications 119, 120 or 121 as appropriate.

Extension of Private Commercial Services to Ships

1.30 This is a service of ship management communication between land stations and ship stations and also between such ships where authorized in their licences.

1.30.1 This category of service is available in any area of Canada and includes all ship/shore and intership radiotelephone service of a private nature, i.e., those which are not provided by public facilities. Private services of this nature are usually required within harbours and sheltered waters, e.g., dispatch type service for towboats, service craft, water taxis etc. This service also includes private communication for marine contractors, surveying or drilling operations, fishing and logging operations in areas remote from regular communication facilities.

Land Stations Private Commercial Service ***

1.30.2 Companies or individuals serving a specific user group, providing a land mobile service may be authorized to extend such services to vessels in the area using frequencies assigned for private land mobile use in the bands between 138 and 174 MHz or between 406.1 and 470 MHz, ship/shore simplex working to be on a secondary basis to the land mobile service. In addition, land stations (Private Commercial Service) may be authorized on a special case basis to use the foregoing order of frequencies solely for ship/shore simplex working on a secondary basis to the land mobile service.

Note 1: 156.075, 156.125 and 156.200 MHz have been made available, on a secondary basis to the land mobile service, for Private Ship/Shore use, particularly fishing operations, in the Bay of Fundy and Atlantic Coastal areas. Stations on shore are to be licensed as Private Commercial stations.

Note 2: Refer to PM-1-3 for Canadian Plan for VHF Maritime Mobile Radiotelephone channels.

1.30.3 Land or Fixed Stations authorized to employ medium frequencies for the provision of a land mobile or fixed (point-to-point) service may be authorized, on a special case basis, to use such frequencies for communication with ships owned by or directly associated with the licensee.

Private Commercial Stations Employing Frequencies Shared with Maritime Mobile Service

1.31 Private commercial stations may be authorized to employ frequencies shared with the Maritime Mobile service in accordance with the following table:

Land Station Transmit		Mobile (Ship) Transmit		Area	Remarks
156.35	MHz	156.35	MHz	All areas	Simplex work primarily for ship despatching in harbours
156.425	"	156.425	"	All areas	Simplex working, marinas, yacht clubs, recreational craft, etc.
156.375	"	156.375	"	East Coast	Simplex working, fishing industry only. (See Note 1 below)
156.475	"	156.475	"		
156.675	"	156.675	"		
156.80	"	156.80	"	East & West Coasts	On an individual case basis (See Note 2 below)
156.90	"	156.90	"	All areas	Simplex working, primarily for tug despatching in harbours.
1630	kHz	1630	kHz)	West Coast	Simplex working, licensing on a special case basis (See Note 3 and 4 below)
2040	"	2040	")		
2318	"	2318	")		
2366	"	2366	")		

Land Station Transmit		Mobile (Ship) Transmit		Area	Remarks
2020	kHz	2020	kHz)	East Coast	Simplex working,
2134	"	2134	")	and St.	licensing on a
2237	"	2237	")	Lawrence River from Montreal Eastward	special case basis (See Notes 3 and 4).
2182	"	2182	"	East & West Coasts	On an individual case basis (See Notes 2, 3 & 4)

Note 1: These frequencies may be used in this service on a conditional basis subject to review and/or withdrawal should the channels be required by the (primary) Maritime Mobile Service for safety purposes. Use of these channels within Canada/US co-ordination zone require co-ordination.

Note 2: Each request for authority to employ 2182 kHz or 156.80 MHz at a privately operated land station will be dealt with on an individual case basis and any authorization granted shall be subject to the following conditions:

1) The use of the frequency 2182 kHz or 156.80 MHz shall be restricted to the handling of distress calls and distress traffic, urgency signals and urgency messages, safety signals, normal calls and replies to ship stations; and

2) The use of the frequency 2182 kHz or 156.80 MHz shall be subject to control, at all times, by the Department and by Canadian Coast Guard radio stations.

Note 3: The transmitter power of stations using medium frequencies shall not be greater than that required to perform a satisfactory service, which normally should not exceed 100 Watts PEP. Applications proposing the use of higher power shall be justified on technical or operational grounds.

Note 4: The use of medium frequencies by stations in the Private Commercial Service is subject to withdrawal when it is practicable to use VHF in lieu thereof. Wherever feasible, new land stations in the Private Commercial Service will be licensed on VHF.

Mobile Stations on Board Ships

1.32 Mobile stations on board ships may be authorized to participate in a private commercial service by an endorsement to an existing licence for the maritime mobile service. Exceptionally, where the mobile station is fitted for private commercial service operation only, the service may be authorized by the issuance of a licence for a mobile station performing a private commercial service.

Private Intership Communications Fishing Companies

1.33 Because of the congestion on intership frequencies in the 2 MHz band and representations for a measure of privacy by certain fishing companies in their intership communications, such communications may be authorized on a case-by-case basis under the provisions of the Radio Act on available land mobile frequencies in the bands 27.41-50 MHz and 150.05-174.0 MHz.

Assignment of Frequencies

1.33.1 Single frequency channels in these bands may be assigned to individual fishing companies on a non-exclusive basis, although the Department will endeavour to assign different channels to competitive companies in so far as this is possible.

Conditions of Operation

1.33.2

a) Intership and ship-shore communications between company stations may be authorized.

b) Communications shall be on a secondary non-interference basis to the Land Mobile Service, subject to withdrawal should complaints be received of interference to the primary Land Mobile Service operating in these bands in either Canada or the United States.

c) Communications shall be considered solely as an extension to private land mobile (non-safety) radiotelephone service.

Technical Requirements

1.33.3 Land and mobile stations on ships, operating on non-maritime frequencies in the bands between 27.41 and 174 MHz shall be type-approved under RSS119; i.e., both are licensed in the Private Commercial Service. However, if the ship is already licensed in the Maritime Mobile Service the private frequency may be included on the ship station licence.

Licensing of Private Ship/ Shore and Intership SSB Communications

1.34 Licences may be issued to provide private ship/shore and inter-ship SSB communications on MF and HF frequencies in all maritime areas of Canada. Subject to the technical and geographical limitations, frequencies are available on demonstration of need, on a shared, no-protection basis as provided below.

US/Canada 2 MHz SSB Frequency Plan

1.34.1 Four frequencies in the 2 MHz range of the MF band are available in Canada for private ship/shore and intership SSB communications, under a sharing plan between Canada and the United States. (In addition, two frequencies are set aside for exclusive use by the Canadian and United States governments). Only single-sideband, suppressed carrier emissions may be used on these frequencies. An implementation plan to provide for equitable sharing of the frequencies has been adopted.- See Appendix A.

High Frequency SSB Bands

1.34.2 Private ship-shore and intership SSB communications may be conducted in the HF Band. Details of the specific frequencies involved in the 4, 6, 8, 12, 16 and 22 MHz bands are given in Appendix B

Technical Requirements

1.35 The technical requirements for radio equipment employed for private commercial operation on board ships are based on the service in which the ship is participating, e.g., a ship participating in the land mobile service in the 150.05-174.0 MHz band, where maritime mobile frequencies are not involved, is required to fit equipment type-approved for operation in the Private Commercial Service (RSS119).

1.35.1 For stations (land and mobile) in the private commercial service employing MF/HF/VHF channels shared with the Maritime Mobile Service, the technical requirements are based on the maritime mobile requirements, noting that DOT General Specifications CGTR-1 and CGTR-2 apply to compulsory ship board installations only. Where maritime mobile frequencies are shared, both land station and ship station equipment shall meet technical requirements as follows:

Frequency	Emissions	Radio Standards Specification (RSS)
1.6 - 28 MHz	Single sideband	RSS181
156.0 - 162.5 MHz	Frequency Modulation (25 kHz channel spacing)	RSS182

1.35.2 Where maritime mobile frequencies are shared with the private commercial service and the installation fitted on board a ship for safety purposes is capable of operation on the additional shared frequencies, such operation can be authorized if the technical requirements of 1.35.1 have been fulfilled.

Frequency for Special Events

1.36 The frequency 464.8250 MHz has been co-ordinated with the United States on a Canada-Wide basis with a maximum power output of 2 Watts (mean power to antenna) and a bandwidth and emission of 16F3 for communication in connection with special events such as ski meets, golf tournaments and stadium events, etc.

1.36.1 Authority may be granted for use of this frequency for the specified period of time for the appropriate event, on a non-interference basis.

Use of 173.640 MHz by Skiing, Golfing and Hang Gliding Clubs

1.37 The frequency 173.640 MHz, with a maximum power of 3 Watts, has been assigned to the Canadian Ski Patrol for ski patrol operations. The frequency is to be shared with the Royal Canadian Golf Association who have been authorized to use it at their events on a Canada wide basis. As these two group activities mainly occur in different seasons, there should be no conflict. Also, hang gliding clubs may be authorized to use 173.640 MHz, on a shared non-interference basis, with a maximum power of 1 Watt, for tracking operations.

Drive-In Theatres "Cinemaradio"

1.38 "Cinemaradio" is a system which uses AM transmitting equipment operating on the frequencies 530 kHz to 1610 kHz with a power of 1-2 Watts. This system is used to provide the audio of a film to the drive-in theatre patrons. It consists of buried cables which form a radiating network fed by a small transmitter housed in the projection building. The signal is picked up by the car radio, thus eliminating the need for an "in-car" speaker together with its holding post.

1.38.1 The CRTC does not recognize this operation as being a broadcasting undertaking because the signals are received by paying theatre customers and are not intended for reception by the general public. Therefore, such facilities may be licensed under the Radio Act provided the operator of the theatre meets the licensing eligibility requirements and the following conditions:

1) That the sound to be carried on the "Cinemaradio" facility would only be the sound track of the film being shown;

2) That the equipment be acceptable in accordance with RSP100 using RSS158 as a guide;

3) Authority for the use of such equipment would only be granted on a non-interference basis to other services, especially the broadcasting service; and

4) That no call-sign be issued.

***

1.38.2 For information regarding "FM Cinemaradio" see PM 1-7.

Oil Spill Operations

1.39 In order to facilitate "on scene" communications during oil spill clean-up operations the following frequencies have been made available for assignment for use by companies and agencies involved in such activities:

	Transmit	Receive
Ch. 1 (Repeater)	159.480 MHz	158.445 MHz
Ch. 2 (Simplex)	159.480 MHz	159.480 MHz
Ch. 3 (Repeater)	150.980 MHz	154.585 MHz
Ch. 4 (Simplex)	150.980 MHz	150.980 MHz
Ch. 5 (Repeater)	454.000 MHz	459.000 MHz
Ch. 6 (Simplex)	454.000 MHz	454.000 MHz
Ch. 7 (Simplex)	453.5875 MHz	453.5875 MHz

Note: The frequency 453.5875 MHz (simplex) may be used in hand-held portable equipment with a maximum power of 2 watts. It is available for both oil-spill and industrial-spill clean up operations. * In practice, industrial spill contractors will be tied into the PACE grid system by means of hand-held portable equipment on temporary loan from the PACE organization. In the Edmonton, Calgary and Winnipeg areas other users of this frequency should be asked to minimize their usage whenever oil/industrial spill operations are in progress.

1.39.1 The use of these frequencies has been co-ordinated with the Petroleum Association for the Conservation of the Canadian Environment (PACE) and their counter-part, the American Petroleum Institute (API) in the United States where the same frequencies may be used for this purpose.

Licensing Conditions

1.39.2 The power output shall not exceed that necessary to provide the required service. However, the maximum ERP for base and fixed stations shall be 125 Watts; for mobile stations 30 Watts. Powers in excess of those stipulated may be permitted on a case-by-case basis provided the applicant justifies on technical or operational grounds, the use of powers as requested.

1.39.3 VHF Channel 81A (157.075 MHz) has been made available for exclusive assignment to the Canadian Coast Guard, shared with the United States Coast Guard for pollution clean-up operations. The CCG has stockpiled equipment fitted with several VHF channels, including channel 81A, at various locations across the country.

Industrial Spill Operations

1.39.4 The frequency 464.5375 MHz has been coordinated and reserved Canada-wide, limited to hand-held portable equipment with a maximum of 2 watts, to facilitate the clean-up of industrial spills. Use of this frequency in the Halifax, Toronto and Hamilton areas must be coordinated with the nearest DOC office with respect to adjacent channel assignments. Also, interference shall not be caused to the U.S. Business Radio Service on 464.525 MHz in Detroit, Michigan.

Low Power Telemetry

1.40 The frequencies 172.725 MHz and 464.6375 MHz have been co-ordinated and reserved for Canada wide assignment to low-power telemetry installations. Radio equipment must be technically acceptable for licensing in accordance with RSP100. Power shall not exceed 5 Watts ERP.

Wireless Mikes TV Channels 7-13

1.41 Wireless microphones operating in the band 174-216 MHz may be licensed on the following basis:

1) on a no-protection non-interference basis;

2) frequencies shall be selected and assigned from within television channels 7 to 13 (174-216 MHz);

3) operational areas shall be restricted to locations that are at least 8 miles outside the Grade B contour of television stations that operate on the channel in which the frequency assignment falls;

4) location of operation to be shown on licence; and

5) licensee shall resolve interference complaints that result from microphone operation.

Technical Requirements

1.41.1 Equipment shall be technically acceptable under Radio Standards Procedure 100 using

a) in the case of the receiver, paragraph 8.6 of RSS 121 as a guide to evaluate the spurious output signals;

b) in the case of the transmitter, RSS 214 as a guide with the following limits being applied:

i) transmitter shall not be capable of emitting Hertzian waves of a field strength greater than 100 mV/m at a distance of fifteen metres;

ii) transmitter frequency - crystal controlled 0.005%;

iii) modulation - frequency modulation $\pm$ 15 kHz deviation 15 kHz maximum modulating frequency;

iv) bandwidth - 100 kHz; and

v) out of band emissions shall be attenuated by

25 db	f_c	$\pm$150 kHz	to	100 kHz
35 db	f_c	$\pm$100 kHz	to	250 kHz
43 + 10 log 10pt	f_c	$\pm$250 kHz.		

Radar-Speed Measuring Devices

1.42 In addition to government agencies, persons or organizations who meet the licensing requirements of the Regulations may obtain a licence for a radar speed measuring device.

Conditions

1.42.1 When authorizing the operation of these devices, the following conditions apply:

1) operation shall be restricted to a specific area;
2) if possible, the transmitting frequency shall not be shared with others in that area;
3) the device shall not cause interference to any radio service; and
4) the device shall be technically acceptable under RSP100.

Power Line Carriers ***

1.43 Power line carrier (PLC) systems are used extensively in Canada by power companies and power commissions for protective relaying of high voltage transmission lines, telemetering of loads, water levels, automatic control of generating stations and operational voice channels between power stations, etc. PLC's operate normally in the bands below 190 kHz although in certain cases they have been permitted into the 415-490 kHz band.

***

1.43.1 It has been determined that PLC's do not fall within the definition of a radio station as specified in the Radio Act. Therefore effective April 1, 1983 PLC's are not longer licensed by the department and all PLC records deleted from the data base.

***

1.43.2 Although PLC equipment is not considered as "radio apparatus" it does fall within the Radio Interference Regulations as machinery, apparatus or equipment liable to cause interference and may not interfer with radio.

National Land Mobile Radio System

1.44 A National Land Mobile Radio System is a system that has common frequencies assigned, for use normally within all five DOC regions.

A frequency assignment for a national land-mobile radio system will be considered if its operational function satisfies the following requirements:

- operational necessity for the mobile and/or portable radio equipment to travel and be used on a regular basis, normally within all five DOC regions;

- operational necessity for the mobile and/or portable radio equipment to operate on the same frequency(s) at all operating locations; or

- to provide response to unpredictable emergencies of national geographical scope and concerns.

National Low Power Frequency Assignment ***

1.44.1 The frequencies 458.6625 and 469.2625 MHz have been allocated for portable use, with an output power of less than 5 watts and are to be assigned to companies, etc. that have a need for localized communications at one or more locations in Canada.

Aids for the Handicapped ***

1.45 The frequency 43.64 MHz has been allocated on a national basis for the operation of devices intended as aids for the handicapped.

Equipment ***

1.45.1 The equipment must be technically acceptable in accordance with RSP 100 and meet the following criteria:

a) maximum bandwidth is 16 kHz.
b) maximum ERP is 1 watt.
c) maximum transmission duration is 2 seconds.
d) the operation is restricted to 43.64 MHz.

Tactile Communicator ***

1.45.2 This frequency has been assigned for use by the C.N.I.B. "Tactile Communicator".

Evaluation Criteria for Trunked Mobile Radio Systems ***

1.46 Trunked systems are intended primarily or soley for the provision of despatch services, not mobile telephone services. (for evaluation criteria see appendix L)

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2. PRIVATE COMMERCIAL RECEIVING SERVICE

Definition

2.1 Private Commercial Receiving Service is a service provided by land or mobile stations equipped for reception only for the purpose of receiving the private correspondence of the licensee, or signals from such stations as may be authorized. (Ref. G.R.R., Part II, Sec. 2).

Radio Receiving Equipment Land Mobile Service

2.2 All receiving equipment used in the land mobile service, unless specifically exempted under the appropriate section of the Radio Regulations, is subject to licensing. In general such radio receiving apparatus falls within one of two categories. First, where the equipment is used in conjunction with a transmitting facility, that is, where it forms an essential part of a two-way communication system. The second category, where the receiving apparatus is used for one-way communication or monitoring only.

Technical Requirement

2.2.1 Radio receiving equipment falling within the first category mentioned above is required to be type approved in accordance with the technical specification appropriate to the class of service being performed. Receiving equipment falling within the latter category is required to be technically acceptable only.

Over-Reading Air Traffic Control Frequencies

2.3 Applications for licences have been received from various aeronautical companies desiring to establish Private Commercial Receiving stations at controlled airports across Canada. The purpose of these proposed stations is to monitor the Airport Control Tower frequencies in order to obtain information regarding the arrival and departure of aircraft and as a result facilitate the companies' aeronautical operations.

Monitor Drops

2.3.1 The Department of Transport provides "Monitor Drop" facilities for aeronautical operators at controlled airports and these facilities are employed to over-read A.T.C. frequencies.

Licensing Off-Air Reception of A.T.C. Frequencies

2.3.2 The question of the granting of Private Commercial Receiving Station licences for the purpose of over-reading the A.T.C. frequencies has been discussed with Civil Aviation authorities, who have no objection to the licensing of private receivers to monitor A.T.C. frequencies, provided a condition similar to that which now protects the Department of Transport from misuse of information received by the "Monitor Drop" is applicable.

Licensing Conditions

2.3.3 Licences may be granted to establish Private Commercial Receiving Stations at airports for the purpose of over-reading A.T.C. frequencies. Any licence issued authorizing the monitoring of A.T.C. frequencies would be subject to the following:

> "In accordance with the provisions of Section 9(2) of the Radio Act, the licensee shall not use or divulge any information which may be received by the herein licensed station for any purpose other than as an aid to the official business or activities of the licensee or of any other aircraft operator on whose behalf the licensee is acting; provided that such use or divulgence of information originating from any aircraft is permitted subject to the licensee being so authorized by the aircraft operator concerned."

3. PRIVATE COMMERCIAL AUTOMATIC REPEATER SERVICE

Definition

3.1 Private Commercial Automatic Repeater Service is a service for the handling of the private correspondence of the licensee, provided by land stations operated for the automatic reception and retransmission of radio within a communication system, that does not accept traffic from or deliver traffic to external points by means other than radio. (Ref. G.R.R., Part II, Sec. 2)

Automatic Repeater Stations in the Fixed/ Mobile Bands Between 27.41 and 470 MHz Bands

3.2 While the Department is not, in principle, averse to the use of Private Commercial automatic repeaters and the multiple frequency assignments required by such systems, applications for authorizations of this nature are not to be considered as routine but rather as submissions that are designed to meet extraordinary operating needs that may not be satisfied in any other reasonable manner. In other words, applicants must demonstrate on technical and/or operational grounds that the operation of an automatic repeater station is necessary to meet their radio-communication requirements. Generally, automatic repeater facilities are proposed for one or the other of the following:

a) to extend mobile to mobile coverage;

b) to extend base to mobile coverage;

c) to extend point-to-point coverage, on a secondary basis to land mobile coverage, through common facilities; or

d) to overcome terrain obstacles.

Propagation and Frequency Utilization ***

3.2.1 In examining applications for authority to establish private automatic repeater stations within the Fixed/Mobile bands between 27.41 and 470 MHz, and 806-866 MHz it is necessary to consider propagation and frequency utilization in the particular geographical area involved as the use of such facilities under certain conditions could limit the growth of normal single frequency systems or services in the same or adjacent areas.

3.2.2 Generally, equipment limitations such as the use of very low power transmitters should not be considered as justification for the use of automatic repeater facilities particularly where other facilities, such as landline, may be available to meet the requirement of an automatic repeater.

Conditions for Licensing Private Automatic Repeaters

3.2.3 The following criteria shall apply in dealing with applications for licences to establish and operate automatic repeater facilities in the radio frequency bands concerned.

1) Bands between 138 and 174 MHz outside the United States/Canada co-ordination zone, or in the 27.41-50.00, 410-430, 450-470 and 806-821 and 851-866 MHz bands all areas.

a) Favourable consideration may be given to applications for licences to establish and operate automatic repeater stations where only one such station is involved and where frequency usage makes it possible to assign a second frequency to the system.

b) Applications proposing the establishment and operation of more than one automatic repeater station or requiring more than two frequencies may be considered on a special case basis taking into account the area involved, availability of frequencies and foreseeable expansion of normal single frequency services in the same or adjacent areas.

2) Bands between 138 and 174 MHz within the United States/Canada co-ordination zone.

a) Applicants shall be encouraged, wherever possible to

i) use multiple base stations operating on a single frequency and connected by wirelines for simultaneous transmission,

ii) employ frequencies in the 27.41-50.00, 410-430, 450-470, 806-821 or 851-866 MHz bands for the complete system rather than frequencies between 138 and 174 MHz, or

iii) employ frequencies as provided in ii) above, or in higher frequency bands, for the automatic repeater portion of the system;

b) Automatic repeater (2 frequency) operation in the bands between 138 and 174 MHz will normally be authorized only to Federal, Provincial, Municipal and Common Carrier communication systems, provided such operation is technically feasible and frequencies are available for this purpose in the area involved.

c) Applications proposing Private Commercial automatic repeater operation in these bands will not normally be given favourable consideration unless it can be demonstrated that the frequencies indicated in 2) a) ii) and 2) a) iii) above may not reasonably be employed.

Conditions of Licensing

3.2.4 Applicants for authority to establish and operate automatic repeater radio facilities may be required to indicate the steps they will take to prevent interference to other licensees, particularly in those cases where sharing of frequency assignments with other licensees is a normal condition of licensing. Such applicants shall be informed that frequencies assigned for this purpose may be withdrawn or changed at the discretion of the Department of Communications.

Identification

3.2.5 Where two or more licensees have separate licences for the shared use of a repeater, our requirements will be met if only one call sign is transmitted by the automatic identification unit.

Call Sign

3.2.5.1 The call sign to be used shall be agreed upon by the separate licensees, and the holder of that call sign shall be responsible for notifiying the local DOC office of the selected identifier.

Shared Repeaters ***

3.3. Since the operation of shared private commercial repeaters is spectrum efficient, licence applications may be given approval where:

a) The repeater will be multiple licenced; with one call sign being selected from among these licences and used for identification purposes.

b) the associated base and mobile stations will be licenced in the names of the individual applicants.

c) Licence applicants supply an agreement indicating permission from the other users to share the use of the repeater facility.

d) a statement is filed indicating that no charge is being levied for the communication service and that the only costs that will be assumed by the applicant are those associated with the establishment, operation and maintaince of the facility.

e) the technical parameters of the repeater conforms with the other classes of stations in the bands.

f) the power output does not exceed that necessary to provide the required service.

US/Canada 2 MHz SSB Frequency Plan

Carrier Freq. kHz	Canadian Use	U.S. Use
2086.0	Nil	(i) Primary Service. Communications between ship stations and coast stations in Maritime Mobile Service on the Mississippi River and inland waters. (ii) Secondary Service. On a non-interference basis to above use, frequency may also be used on the U.S. East, West and Gulf Coasts and in the Alaska area. (iii) Not available on Great Lakes.
2093	Private ship/shore communications in coastal areas of Canada, including the St. Lawrence River as far west as Montreal. Maximum power output 150 Watts, PEP.	Intership communications in the Maritime Mobile Service by commercial vessels engaged in commercial fishing in all areas except the Great Lakes.

US/Canada 2 MHz SSB Frequency Plan

Carrier Freq. kHz	Canadian Use	U.S. Use
2096.5	Nil	Private maritime Mobile between ship and coast stations in all areas except the Great Lakes.
2100.0	Government, Navy. Output power shall not exceed that necessary to provide the required service with an upper limit of 1 kW PEP.	Government.
2103.5	Government, C.C.G. Output power shall not exceed that necessary to provide the required service with an upper limit of 1 kW PEP.	Government.

High Frequency SSB Channels Available for Private Commercial Use

Carrier Freq. kHz		Remarks
4143.6	16587.1	World wide common use by ships of all categories, for ship transmissions to coast stations and for intership communications. Coast stations may use for simplex operation provided the PEP does not exceed 1 kW.
6218.5	16590.2	
6221.6	16593.3	
8291.1	22124.0	
8294.2	22127.1	
12429.2	22130.2	
12432.3	22133.3	
12435.4	22136.4	
4125		World wide ship station calling frequency. However, in Canada (and the USA) this frequency is also authorized for common use by coast and ship stations on a simplex basis provided the PEP does not exceed 1 kW.
4419.4		World-wide coast station calling frequency. However, in Canada (and elsewhere in Region 2 and 3) this frequency is also authorized for common use by coast and ship stations on a simplex basis provided the PEP does not exceed 1 kW.
6521.9		Daytime use only. World-wide coast station calling frequency. However, in Canada (and elsewhere in Region 2 and 3) this frequency is also authorized for common use by coast and ship stations on a simplex basis provided the PEP does not exceed 1 Kw.

DEPARTMENT OF COMMUNICATIONS

RADIO LICENSING POLICY FOR FIXED SERVICES IN THE BANDS 7125 - 7725 and 7725 - 8275 MEGAHERTZ

INTRODUCTION

The Department gave notice in the Canada Gazette, Part I, of June 26, 1976, inviting comments on a proposed licensing policy covering the two bands 7125-7725 MHz and 7725-8275 MHz.

The Department has taken into consideration these comments, and other information made available since that date, and has given notice of a policy for the two bands in the Canada Gazette, Part I, dated July 16, 1977.

Notification has also been made for new Standard Radio System Plans (SRSP's) No. 305 (Issue 2) and No. 306 (Issue 2) covering the two bands and these should be read in conjunction with the following policies.

OBJECTIVE

The objective of the policies for the FIXED services in the bands 7125-7725 and 7725-8275 Megahertz is to provide guidance to permit the orderly growth and development of the FIXED services in these bands. (1)

POLICY FOR THE BAND 7125-7725 MHz (7 GHz band)

The Department recognizes the importance of adequate and suitable microwave spectrum for the control of electrical energy distribution facilities. In view of the growing importance of power in the economy of Canada, a channelling plan, SRSP 305, was developed in the 7 GHz band to

suit the requirements of the Power Utilities. Similar requirements for low capacity analogue and digital systems are, however, foreseen for other users and the 7 GHz band will continue to be available to a number of users in any given area, particularly where such systems meet the requirements of SRSP 305.

On the basis of information currently available to the Department, and in view of the protection afforded to Power Utility systems in the 8 GHz band, the Department is confident that the microwave requirements of the Power Utilities can be met without conflicting with existing users of the 7 GHz band up to approximately January 1, 1984. Existing systems not conforming to SRSP 305 (Issue 2) will, therefore, be protected at least up to that date. It is proposed to permit "non-conforming" systems to continue to operate in the band after January 1st, 1984, provided they do not restrict the entry, extension or expansion of a system conforming to SRSP 305. Where such a restriction appears likely, the licensee of the existing system may be subject to notice of no less than one year to vacate the 7 GHz band. Such notice would not, however, be given until other suitable spectrum has been found to ensure continuation of service and until consideration has been given to all the economic implications. It is the view of the Department that serious conflicts after January 1984 can largely be avoided by careful planning-stage coordination between the various users of the band.

New systems, or the extension or expansion of existing systems, which do not conform to SRSP 305 (Issue 2) will continue to be considered for licensing in the 7 GHz band when a conforming system cannot be installed. It is, however, expected that such systems will only be required under

exceptional circumstances. Where such systems conflict with existing or planned low capacity analogue or digital systems conforming to the SRSP, the Department will attempt, with the co-operation of the parties concerned, to resolve the conflict in an equitable manner, taking into consideration the technical, economic and operational requirements of all concerned. Such systems will be protected in the same manner as existing "non-conforming" systems as described above.

POLICY FOR THE BAND 7725-8275 MHz (8 GHz Band).

The Department recognizes the importance of providing adequate and suitable microwave spectrum on major trunk routes for medium capacity digital systems to permit Canada to realize the significant cost savings resulting directly from the integrated use of digital switching and transmission systems for voice and data communications. A new channelling plan, SRSP 306, has been developed for the 8 GHz band to suit these requirements which are expected to be met by the Telecommunications Common Carriers. There are other users, primarily the Power Utilities, who already occupy parts of the 8 GHz band with analogue systems and who wish to be able to have access to this band for new analogue or digital systems or to expand existing systems.

On the basis of planning information provided by TCTS, the Department is confident that the plans for the medium capacity digital networks can proceed without conflicting with existing users of the 8 GHz band up to approximately January 1, 1984. Existing systems not conforming to SRSP 306 (Issue 2) will, therefore, be protected at least up to that date. It is proposed to permit existing "non-conforming" systems to continue to operate in the band after January 1st, 1984, provided they do not restrict the

entry, extension or expansion of a system conforming to SRSP 306. Where such a restriction appears likely, the licensee of the existing system may be subject to notice of no less than one year to vacate the 8 GHz band. Such notice would not, however, be given until other suitable spectrum, preferably 7 GHz, has been found to ensure continuation of services and until consideration has been given to all the economic implications. It is the view of the Department that serious conflicts, after January 1984, can largely be avoided by careful planning-stage co-ordination between the users of the band (i.e., the Power Utilities and the Telecommunications Common Carriers).

New systems, or the extension or expansion of existing systems which do not conform to SRSP 306 (Issue 2) will continue to be considered for licensing in the 8 GHz band when a conforming system cannot be installed. It is, however, expected that such systems will only be required under exceptional circumstances. Where such systems conflict with an existing or planned medium capacity digital system conforming to the SRSP, the Department will attempt, with the co-operation of the parties concerned, to resolve the conflict in an equitable manner, taking into consideration the technical, economic and operational requirements of all concerned. Such systems will be protected in the same manner as existing "non-conforming" systems as described above.

POLICY IMPLEMENTATION

The Department is satisfied that the course of action outlined above represents the best means for ensuring the effective use of scarce spectrum

and for satisfying a wide range of needs for spectrum for point-to-point relay systems in the 7 & 8 GHz bands. It recognizes that the implementation of new policies for the utilization of important bands of the spectrum already in use in certain locations will involve a transition period. The Department will closely monitor the implementation of the policies to ensure consistency of application and to avoid potential conflicts and will look to those involved to participate in co-ordination procedures aimed at achieving the most equitable resolution of conflicts that might arise.

Where potential conflicts can be foreseen, they should be brought to the attention of the Department as early as possible. The Licensing Policy and the SRSP's (Issue 2) become effective on July 16, 1977.

Ottawa, July 16, 1977

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(1) There is a band 50 MHz wide within each of the 7 and 8 GHz bands, allocated exclusively to the FIXED-SATELLITE service. It is used by the military for NATO communications. The Department has excluded these bands from plans for the assignment of frequencies for the operation of terrestrial systems.

RADIO LICENSING POLICY FOR SHORT-HAUL MICROWAVE SYSTEMS IN THE BAND 12.7-12.95 GHZ

1. Definition of Service.

Short-haul, one-way, microwave transmission systems, previously designated as Very High Capacity Microwave (VHCM) systems.

Systems operating in the 12.7-12.95 GHz 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.

b) the range is one-hop and limited to approximately 20 miles. A passive relfector 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.

The licensees of such systems must accept, as a condition of licence, that they may not be permitted to use this band beyond January 1, 1988. The Department may continue to renew these licences beyond January 1, 1988 only if the continued operation of the systems does not interfere with the establishment and/or operation of long-haul telecommunications systems. Such licence renewals will be only on a yearly basis. The Department expects the Telecommunications Common Carriers to provide, no later than December 31, 1978, an indication, for the purposes of this policy, of the most-probable path of long-haul 12 GHz Digital routes. Based upon this knowledge, the Department will, after June 30, 1979, no longer license new VHCM systems in this band which can be expected to conflict with long haul digital systems.

2. Radio Licensing Considerations.

2.1. General.

All systems will be licensed in accordance with the current

issue of Radio Standards Procedure 113. In the case of systems associated with broadcasting receiving undertakings, additional considerations will apply as outlined in section 2.2.

2.2. Systems Associated with Broadcasting Receiving Undertakings.

2.2.1. Shared-Use Systems.

In the interest of spectrum efficiency, and because a high degree of commonality is expected to exist in the service provided by the systems associated with broadcasting receiving undertakings in a particular area, the Department will give preference to shared-use systems in those areas where there is more than one user of this service. Shared-use systems are those provided:

a) by a telecommunications carrier, or

b) by an incorporated consortium of licensed broadcasting receiving undertakings.

2.2.2. Participation in Consortia.

Parties to the incorporated consortium under para. 2.2.1(b) shall be limited to those who will be served by the transmitting station.

2.2.3. Licensing Conditions for Shared-Use Systems.

A transmitting station licence to a consortium for a shared-use system will be subject to such conditions as will ensure that:

a) transmission and reception of signals shall be limited to those signals for which the respective parties to the consortium have authorization from the Canadian Radio-television and Telecommunications Commission.

b) a broadcasting receiving undertaking which requires microwave service and which can be served by the transmitting station shall be allowed fair and reasonable participation in the consortium and,

c) continuity of participation in the consortium shall be assured to all broadcasting receiving undertakings operating within the system.

For an area where shared-use systems are contemplated, the Department reserves the right to develop an overall plan, and license in accordance with that plan.

2.2.4. Conditions for Single Licence.

In those areas where there is only one foreseeable requirement for the service, a single broadcasting receiving undertaking may be authorized to operate a system. Under these circumstances the licence for the transmitting station shall be subject to:

a) the condition that the licensee agrees to the establishment of a shared-use system, if required by the Department, when additional broadcasting receiving undertakings require service within the service area of the transmitting station, and

b) the relevant conditions contained in para. 2.2.3.

2.3. Applications for Licence.

Licence applications must be made in accordance with the current issue of Radio Standards Procedure 113. In licensing the use of a system for a broadcasting receiving undertaking, due regard will be taken of the Broadcasting Licence from the Canadian Radio-television and Telecommunications Commission and of the requirements to be met in respect of the issuance of the related Technical Construction and Operating Certificate (TCOC).

3. Technical Guidelines.

Licences will be granted under Guidelines entitled Technical Guidelines For Very High Capacity Microwave (VHCM) CATV Distribution Systems Operating In The 12.7-12.95 GHz Band, released on December 22, 1975, and with effective date January 5, 1976

4. Implementation of this Policy.

In general, the licensing of new short-haul systems in the band 12.7-12.95 GHz will be severely restricted after June 30, 1979. All licensees of such systems are specifically reminded that they may not be permitted to continue operation in this band beyond January 1, 1988 and no licence will be issued unless the applicant agrees to vacate the band when requested by the Department. Licensees will be given at least one year's notice of a termination of operation. The Department is announcing a policy for the 14.5-15.35 GHz band which provides an alternative for the operation of short-haul systems.

The Department recognizes the need to provide spectrum for both short-haul microwave systems and long-haul digital systems. To the degree that the two do not conflict, the Department is willing to consider, on an exception basis, the licensing of both systems. To this end, the Department is interested in obtaining information on the possibility of sharing between digital and analogue systems.

5. Policy Review.

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 early in 1979.

RADIO LICENSING POLICY FOR SHORT-HAUL MICROWAVE SYSTEMS IN THE BAND 14.5-15.35 GHz

1. Eligibility

Short-haul microwave systems with an initial maximum capacity of approximately 20 or 40 television channels or their equivalent, depending on the type of modulation used and on the nature of service, will be eligible to use frequencies in the band 14.5-15.35 GHz.

Within this band, the initial assignment of frequencies to services requiring the transmission of many video channels, or their equivalent, and including those services associated with broadcasting receiving undertakings, will be made in the band 14.5-14.75 GHz. A further 250 MHz in the band will be considered for this type of application for use as required. The remainder of the band will be used for services requiring a single or small number of R.F. channels, or their equivalent.

The policy is designed to promote the effective utilization of the spectrum, while taking all of the relevant factors into account in a particular case. Some flexibility will, therefore, be exercised with respect to the number of hops, the minimum number of video channels or their equivalent, and the use of two-way operation[1]. However, the short-haul nature of the operations in the band will be recognized. (Short-haul, in the context of this policy, will normally be taken to imply a maximum length of 40 miles).

2. Radio Licensing Considerations.

2.1. General.

All systems will be licensed in accordance with the current issue of Radio Standards Procedure 113. In the case of systems associated with broadcasting receiving undertakings, additional considerations will apply as outlined in section 2.2.

2.2. Systems Associated with Broadcasting Receiving Undertakings.

2.2.1. Shared-Use Systems.

In the interest of spectrum efficiency, and because a high degree of commonality is expected to exist in the services provided by the

1 The range and number of hops is subject to review and will, in any event, be considered on a case-by-case basis under RSP-113 procedures.

systems associated with broadcasting receiving undertakings in a particular area, the Department will give preference to shared-use systems, in those areas where there is more than one user of this service. Shared use-systems are those provided -

a) by a telecommunications carrier, or

b) by an incorporated consortium of licensed broadcasting receiving undertakings.

2.2.2. Participation in Consortia.

Parties to the incorporated consortium under section 2.2.1(b) shall be limited to those who will be served by the transmitting station.

2.2.3. Licence Conditions.

A transmitting station licence to a consortium for a shared-use system will be subject to such conditions as will ensure that:

a) transmission and reception of signals shall be limited to those signals for which the respective parties to the cooperative arrangement have authorization from the Canadian Radio-television and Telecommunications Commission,

b) a broadcasting receiving undertaking which requires microwave service and which can be served by the transmitting station shall be allowed fair and reasonable participation in the consortium and,

c) continuity of participation in the consortium shall be assured to all broadcasting receiving undertakings operating within the system.

For an area where shared-use systems are contemplated, the Department reserves the right to develop an overall plan, and licence in accordance with that plan.

2.2.4. Conditions for Single Licence.

In those areas where there is only one foreseeable requirement for the service, a single broadcasting receiving undertaking may be authorized to operate a system. Under these circumstances the licence

for the transmitting station shall be subject to:

a). the condition that the licensee agrees to the establishment of a shared-use system, if required by the Department when additional broadcasting receiving undertakings require service within the service area of the transmitting station, and

b). the relevant conditions contained in section 2.2.3.

2.3. Application for Licence.

Licence applications must be made in accordance with the current issue of Radio Standards Procedure 113. In licensing the use of a system for a broadcasting receiving undertakings, due regard will be taken of the Broadcasting Licence from the Canadian Radio-television and Telecommunications Commission and of the requirements to be met in respect of the issuance of the related Technical Construction and Operating Certificate (TCOC).

3. Technical Guidelines.

Licences will be granted under Technical Guidelines entitled: "Technical Guidelines for Very High Capacity Microwave (VHCM) CATV Distribution Systems Operating in the 14.5-14.75 GHz Band" which are being issued simultaneously with this policy. Applications for licences for systems not covered by these Guidelines will be considered for licensing on an interim basis. A draft Standard Radio System Plan (SRSP) covering the entire band 14.5-15.35 GHz will be issued in 1978.

4. Policy Review.

The Department intends to review this policy early in 1979. Some of the subjects to be considered will be the possible need for extended systems in rural areas and from metropolitan to rural areas.

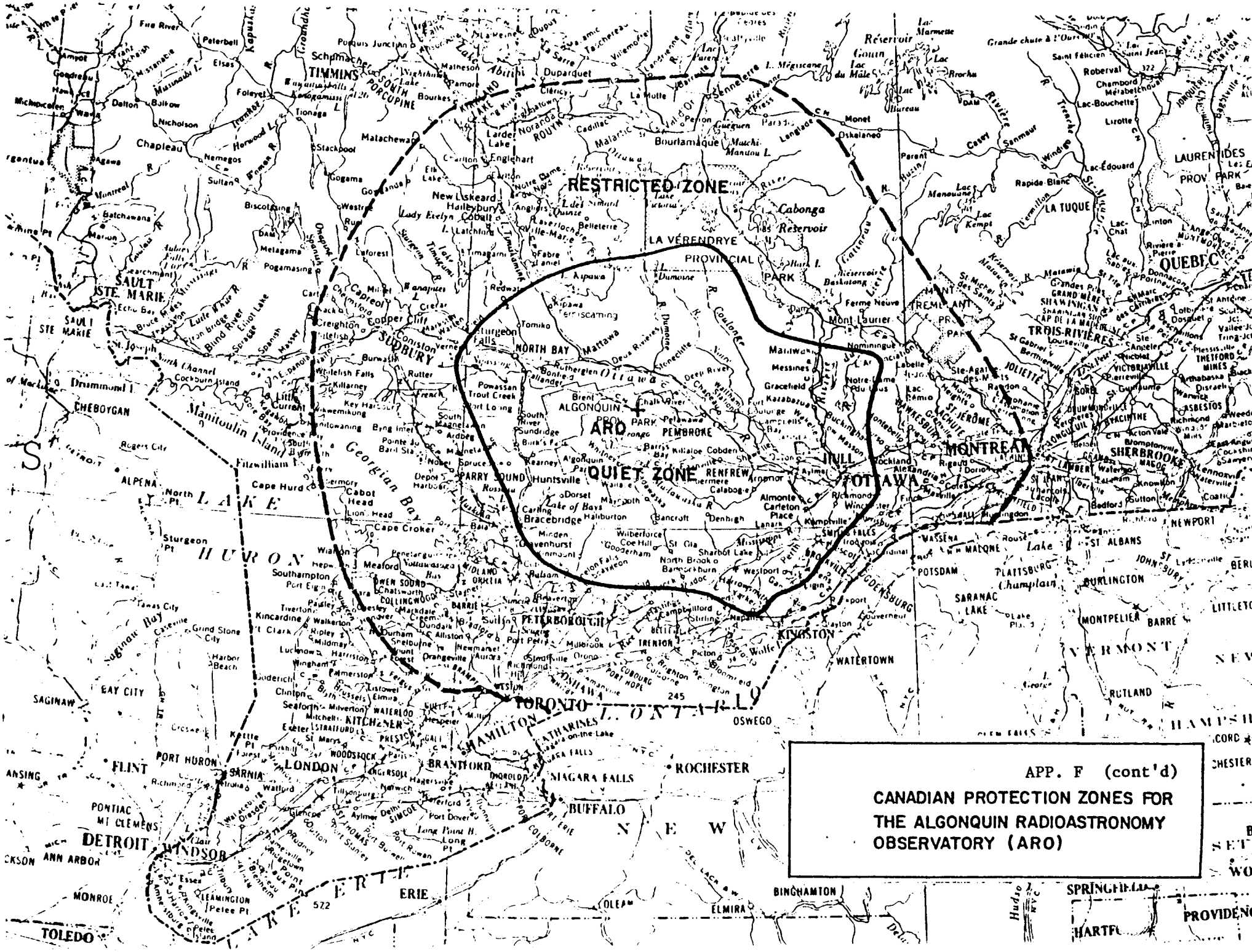
COORDINATION BETWEEN THE MOBILE SERVICE AND THE RADIO ASTRONOMY SERVICE IN THE BAND 406.1-410 MHz

As shown in Figure B-1, in the area in the vicinity of Algonquin Park protection zones have been designated as follows:

1. Quiet Zone: In this zone, the operations of mobile or base stations are prohibited.

2. Restricted Zone: In this zone, base stations are not permitted to operate, however, mobile stations associated with these stations located outside the Restricted Zone would be allowed to operate within this Zone.

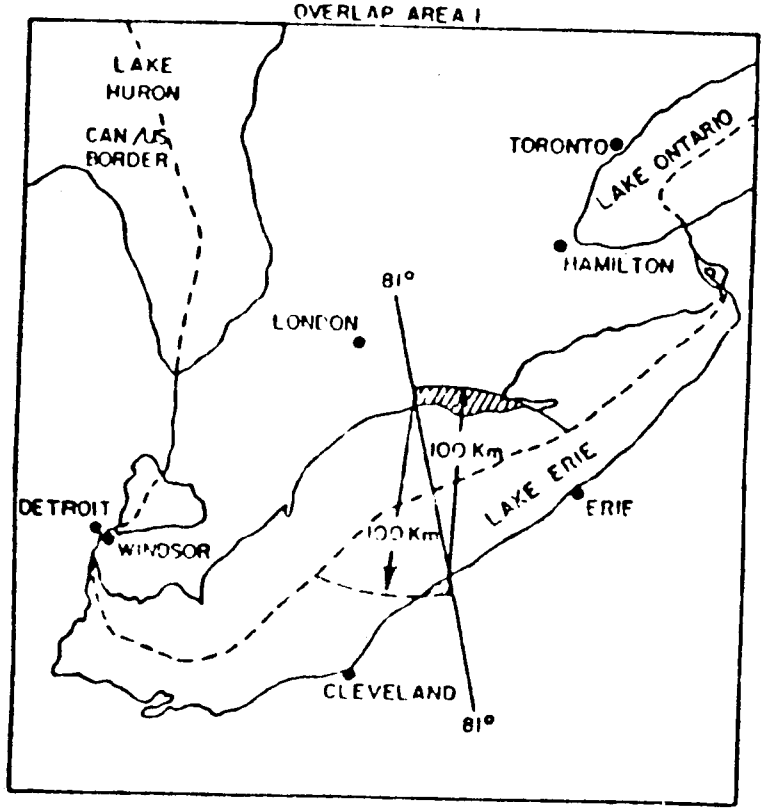
The Penticton radioastronomy observatory is sufficiently remote from major urban centres in both Alberta and British Columbia where mobile service operations in this band are anticipated that protection zones are considered unnecessary. However, assignments in the band 406.1 to 410 MHz in the vicinity of the observatory will be on a case-by-case basis to ensure adequate protection from interference.



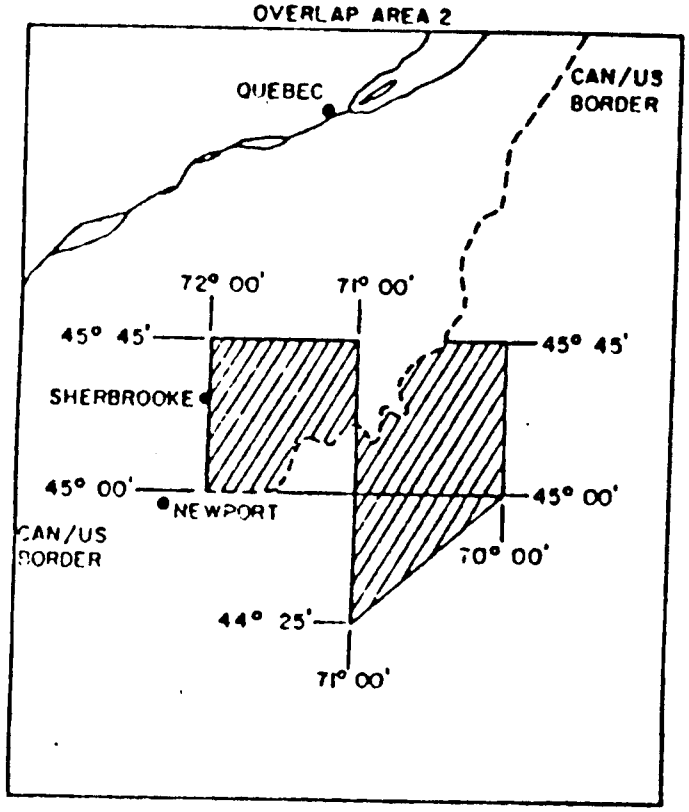
APP. F (cont'd)

CANADIAN PROTECTION ZONES FOR THE ALGONQUIN RADIOASTRONOMY OBSERVATORY (ARO)

CANADA / UNITED STATES SHARING ARRANGEMENT: 806 - 821 MHz AND 851-866 MHz BANDS; BAND OVERLAP COORDINATION



AREAS IN WHICH ASSIGNMENTS MUST BE CO-ORDINATED



Frequency Assignments To Be Coordinated (MHz)
(25 kHz Channel Spacing)

CANADA	UNITED STATES
808.2750 - 811.2250	808.2625 - 811.2375
815.7750 - 818.7250	815.7625 - 818.7375
853.2750 - 856.2250	853.2625 - 856.2375
860.7750 - 863.7250	860.7625 - 863.7375

OVERLAP BANDS

808.2500 - 811.2500
815.7500 - 818.7500
853.2500 - 856.2500
860.7500 - 863.7500

Frequency Assignments To Be Coordinated (MHz)
(25 kHz Channel Spacing)

CANADA	UNITED STATES
808.2750 - 809.7250	808.2625 - 809.7375
817.2750 - 818.7250	817.2625 - 818.7375
853.2750 - 854.7250	853.2625 - 854.7375
862.2750 - 863.7250	862.2625 - 863.7375

OVERLAP BANDS

808.2500 - 809.7500
817.2500 - 818.7500
853.2500 - 854.7500
862.2500 - 863.7500

Figure 3

CANADA/UNITED STATES SHARING ARRANGEMENT

421-430 MHz BAND:

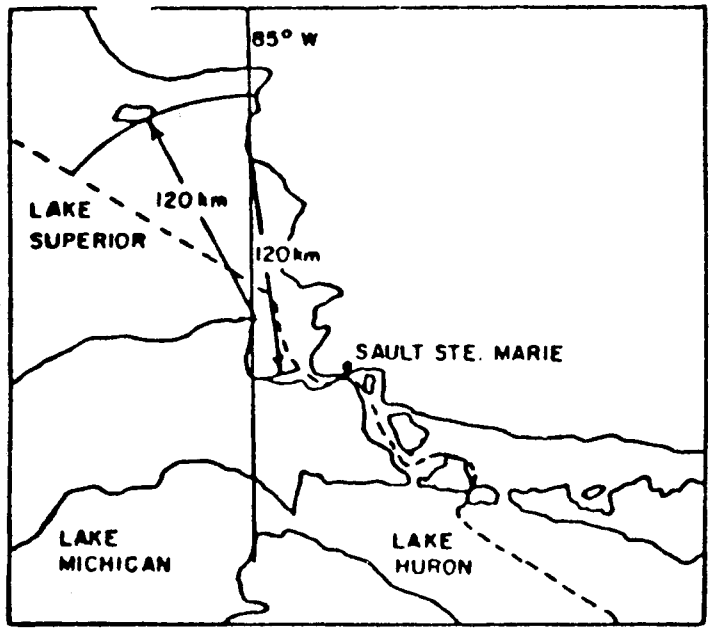
BAND OVERLAP COORDINATION

AREAS IN WHICH COORDINATION IS REQUIRED

AREAS IN WHICH COORDINATION IS NOT REQUIRED

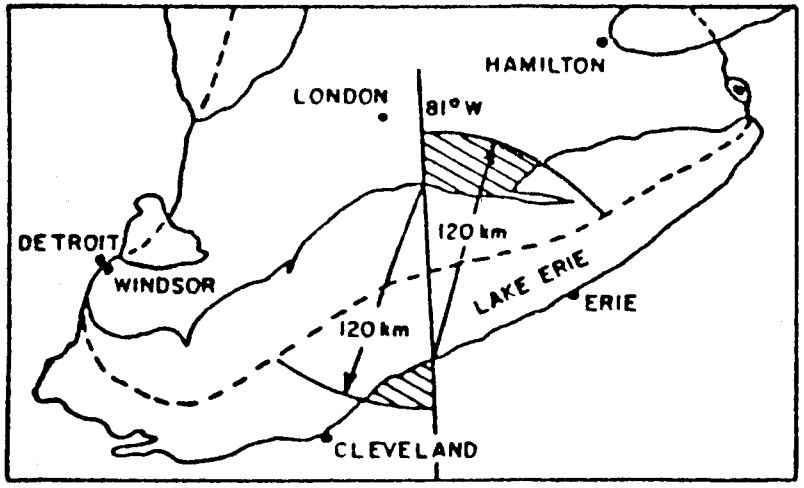
--- US/CANADA BORDER

NOT TO SCALE



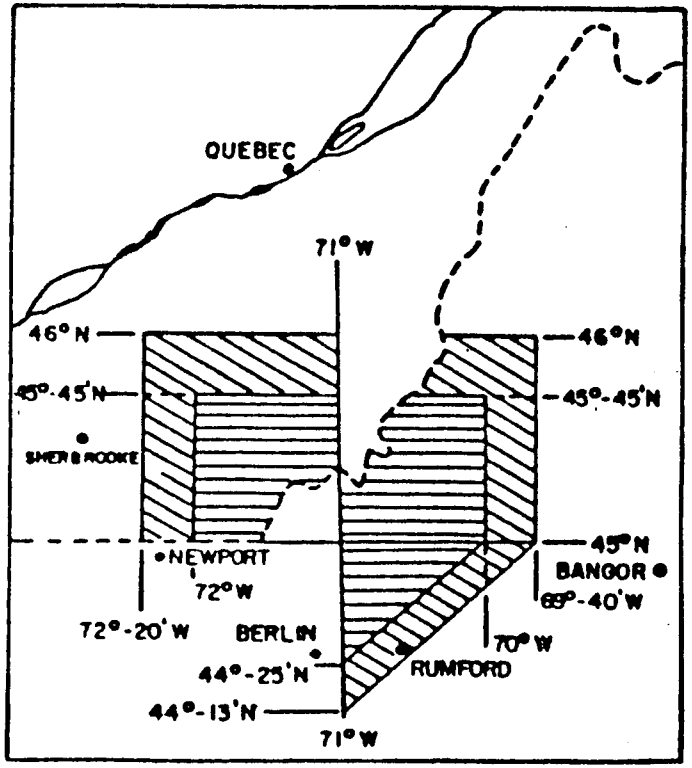
PERMITTED CENTRE FREQUENCIES (25 kHz SPACING)

CANADA	422.2125 - 422.9875 MHz	U.S.:	422.200 - 422.975 MHz
	427.2125 - 427.9875 MHz		427.200 - 427.975 MHz



PERMITTED CENTRE FREQUENCIES (25 kHz SPACING)

CANADA:	422.2125 - 423.7875 MHz	U.S.:	422.200 - 423.775 MHz
	427.2125 - 428.7875 MHz		427.200 - 428.775 MHz



PERMITTED CENTRE FREQUENCIES (25 kHz SPACING)

CANADA:	423.0375 - 423.7875 MHz	U.S.	423.025 - 423.775 MHz
	428.0375 - 428.7875 MHz		428.025 - 428.775 MHz

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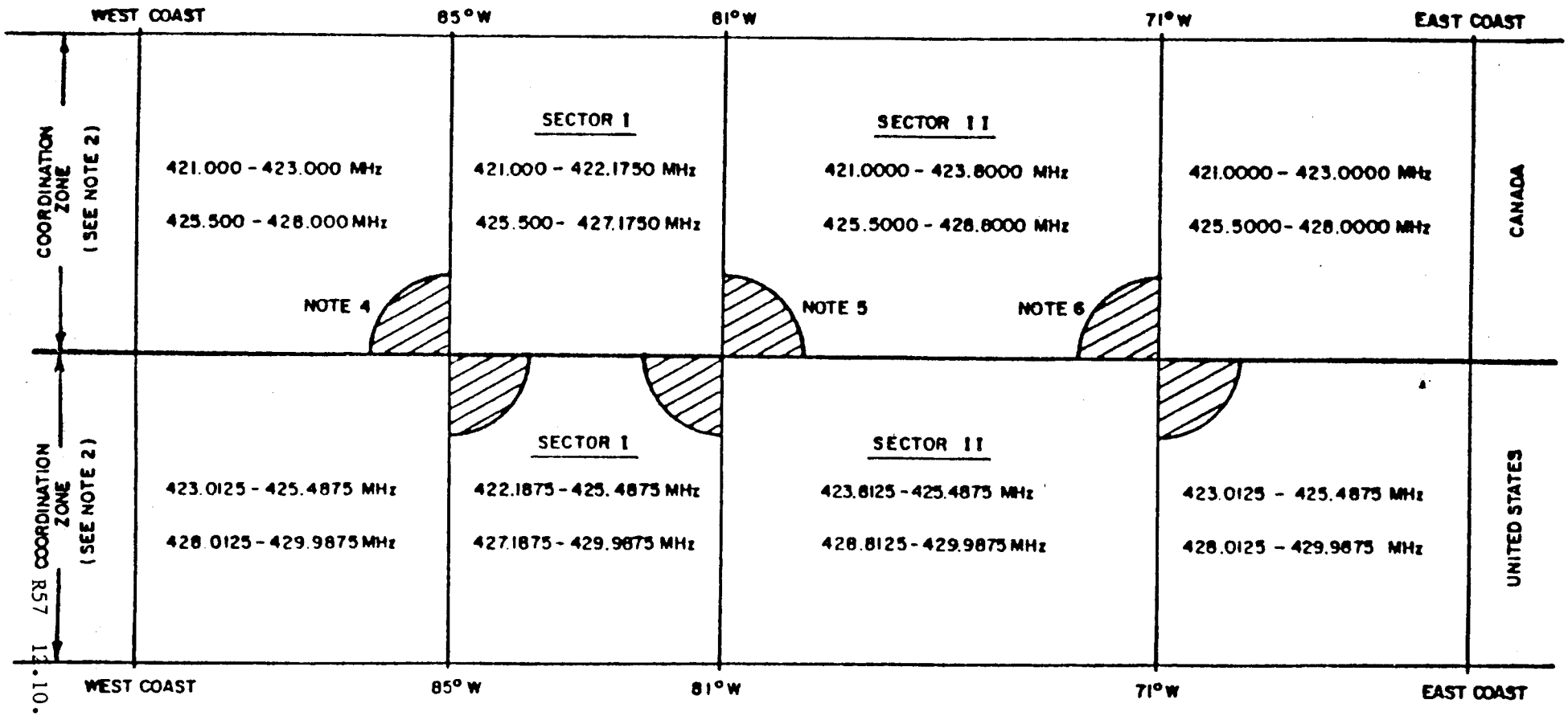
APPENDIX I

PM-1-4

Figure 1

CANADA/UNITED STATES SHARING ARRANGEMENT:

421-430 MHz BAND



NOTES: 1. ALL FREQUENCIES IN MEGAHERTZ.

2 ASSIGNMENTS IN ALASKA/YUKON - BRITISH COLUMBIA COORDINATION ZONE EXCLUDED. SEE SECTION 2.2.

3. ASSIGNMENTS SUBJECT TO ANNEX C REQUIREMENTS.

4. OVERLAP AREA AT 85°W: FREQUENCY BANDS AFFECTED 422.1875 - 423.0000; 427.1875 - 428.0000 MHz.

5. OVERLAP AREA AT 81° W: FREQUENCY BANDS AFFECTED 422.1875 - 423.8000; 427.1875 - 428.8000 MHz.

6. OVERLAP AREA AT 71°W: FREQUENCY BANDS AFFECTED 423.0125 - 423.8000; 428.0125 - 428.8000 MHz.

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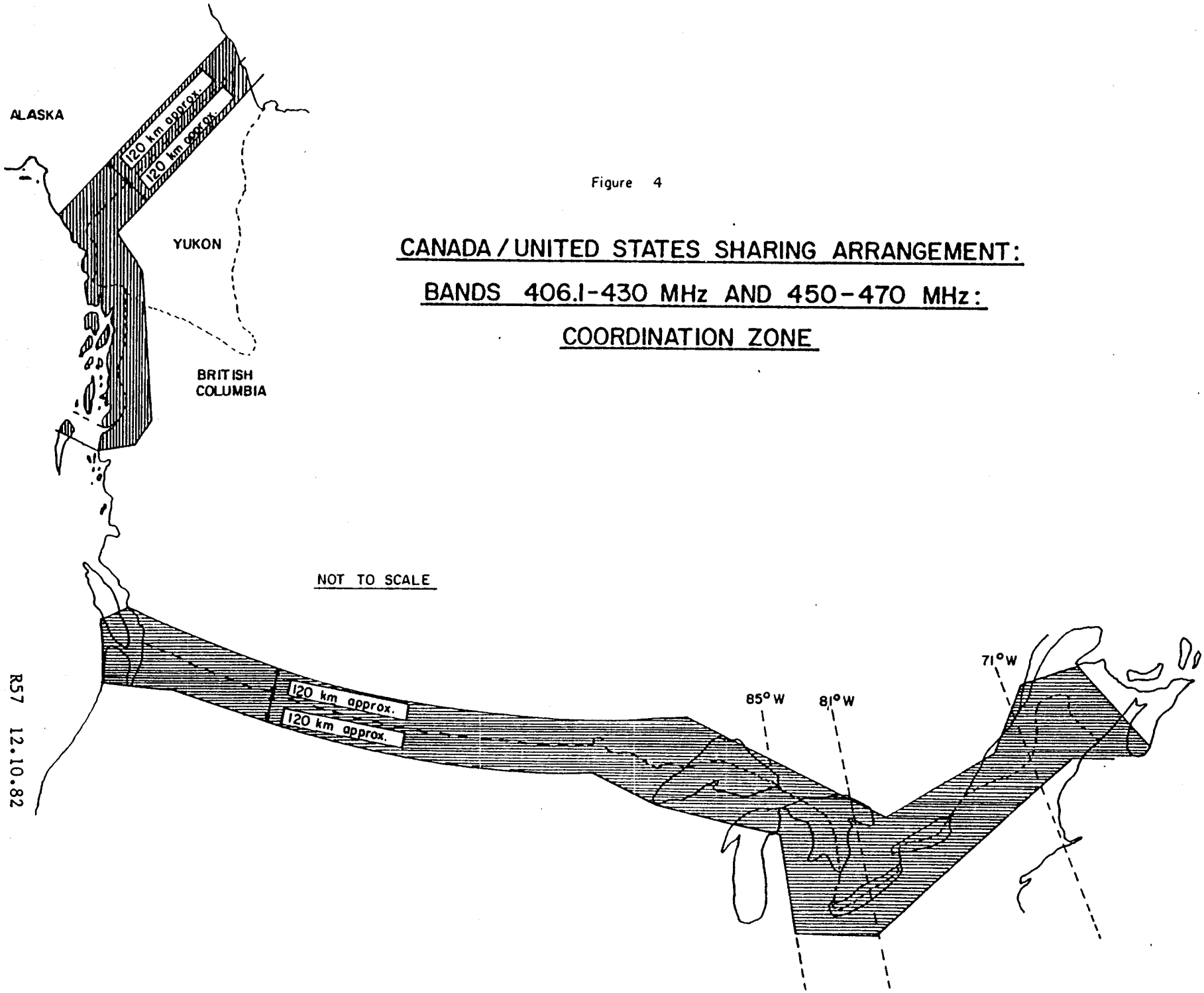
Figure 4

CANADA / UNITED STATES SHARING ARRANGEMENT: BANDS 406.1-430 MHz AND 450-470 MHz: COORDINATION ZONE



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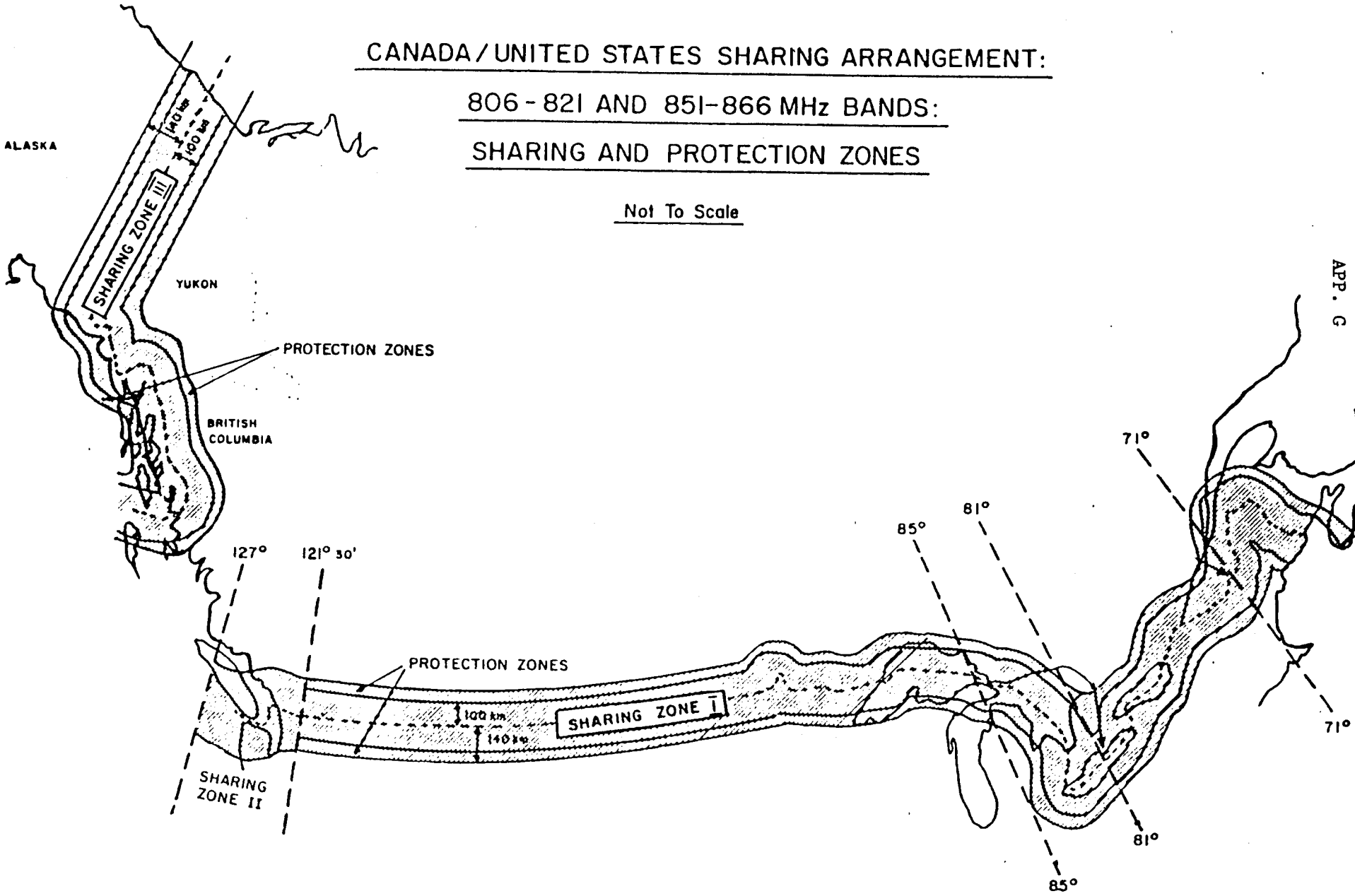
CANADA / UNITED STATES SHARING ARRANGEMENT:

806 - 821 AND 851-866 MHz BANDS:

SHARING AND PROTECTION ZONES

Not To Scale



APP. G

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AREAS OF INTENSIVE, MODERATE AND LIGHT MOBILE USE

Based on the current and forecast spectrum usage by the Fixed and Mobile services, the geographical areas in which VLC links might be authorized under differing sets of conditions are categorized below.

a) Areas of Intensive Mobile Use

These are generally the areas within 120 km of the centres of: Montreal, Toronto, Hamilton, London, Windsor, Kitchener, st. Catharines/Niagara Falls, Oshawa, Edmonton, Calgary and Vancouver.

b) Areas of Moderate Mobile Use

There are generally the areas within 120 km of the centres of: St. John's, Halifax, Saint John, Chicoutimi, Quebec, Sherbrooke, Ottawa-Hull, Sudbury, Thunder Bay, Winnipeg, Regina, Saskatoon and Victoria.

c) Areas of Light Mobile Use

This includes all areas not specified in (a) or (b) above and are areas where spectrum congestion for the Mobile service in the frequency bands below 470 MHz is not expected to be a critical factor for the foreseeable future.

LIST OF FREQUENCY ALLOCATIONS FOR FIXED AND MOBILE SERVICES IN THE FREQUENCY RANGE 30-800 MHz

Order of Use	Frequency Band	Primary Allocation	Secondary Allocation
3	30.01 - 50 MHz	MOBILE	Fixed
2	138 - 144 MHz	FIXED, MOBILE	
2	148 - 149.9 MHz	FIXED, MOBILE	
3	150.05 - 156.7625 MHz	MOBILE	Fixed
3	156.7625 - 174 MHz	MOBILE	Fixed
2	216 - 220 MHz	FIXED, MARITIME MOBILE	
4	401 - 406	OTHERS	Fixed, Mobile (except aeronautical mobile)
*3	406.1 - 414 MHz	MOBILE	Fixed
1	414 - 415 MHz	FIXED	Mobile
3	415 - 419 MHz	MOBILE	Fixed
1	419 - 420 MHz	FIXED	Mobile
*3	420 - 430 MHz	MOBILE	Fixed
3	450 - 470 MHz	MOBILE	Fixed
**	806 - 890 MHz	MOBILE	Fixed
***	Above 890 MHz		

CATEGORIES OF SERVICES:

1. Services the names of which are printed in capital letters, e.g. FIXED, are primary services.

2. Services the names of which are printed in lower case letters e.g. Fixed, are secondary services. Stations of a secondary service:

   a) shall not cause harmful interference to stations of a primary service to which frequencies are already assigned or to which frequencies may be assigned at a later date;

   b) cannot claim protection from harmful interference from stations of a primary service to which frequencies are already assigned or may be assigned at a later date;

   c) can claim protection, however, from harmful interference from stations of the same or other secondary service(s) to which frequencies may be assigned at a later date.

* 409-410/420-421 MHz should be avoided for fixed links.

** In order to avoid any compromise with the development of mobile services in the band 806-890 MHz, no fixed links will be authorized in this band in the areas of intensive and moderate mobile use.

*** **The policy entitled: "Utilization of the 0.890-10.68 GHz radio spectrum by the fixed service" (under preparation) and RSP 113 will be used for the authorization of VLC point to point links above 890 MHz.**

CHART I
(continued)

SYSTEM	AREAS OF INTENSIVE MOBILE USE	AREAS OF MODERATE MOBILE USE	AREAS OF LIGHT MOBILE USE
Government Services	30-890 MHz - 1. fixed primary and mobile secondary bands - 2. fixed and mobile primary - 3. fixed secondary, mobile primary - 4. fixed and mobile secondary others primary - sharing among government users is encouraged on links not required for exclusive use	30-890 MHz - 1. fixed primary, mobile secondary bands - 2. fixed and mobile primary - 3. fixed secondary, mobile primary - 4. fixed and mobile secondary others primary - sharing among government users is encouraged on links not required for exclusive use	30-890 MHz - frequency pairs in any band allocated to fixed and fixed mobile services
Broadcast Auxiliary	The bands 450-451 MHz and 455-456 MHz as indicated in SRSP-501 are available for all areas.		

CHART I
(continued)

SYSTEM	AREAS OF INTENSIVE MOBILE USE	AREAS OF MODERATE MOBILE USE	AREAS OF LIGHT MOBILE USE
Private Commercial	30-890 MHz No fixed links	30-890 MHz Order of Use: - 1. fixed primary, mobile secondary - 2. fixed and mobile primary - 3. fixed secondary, mobile primary - time-sharing encouraged - one frequency pair	30-890 MHz - up to 6 frequency pairs in any band allocated to fixed services
RCCMRS	30-890 MHz No fixed links	30-890 MHz Order of use: - 1. fixed primary, mobile secondary - 2. fixed and mobile primary - 3. fixed secondary, mobile primary - 4. fixed and mobile secondary, others primary - one frequency pair - preference given to systems providing maximum service to public - time-sharing encouraged	30-890 MHz - up to 6 frequency pairs in any band allocated to fixed and mobile services

CHART I

SYSTEM	AREAS OF INTENSIVE MOBILE USE	AREAS OF MODERATE MOBILE USE	AREAS OF LIGHT MOBILE USE
Public Radio Paging (Common Carrier and RCC Provided Paging)	30-890 MHz - fixed primary, mobile secondary bands only if spectrum available - up to 3 frequencies - time-sharing of frequencies between current and future users encouraged - preference given to systems providing maximum service to public (i.e. digital, tone only, tone and voice)	30-890 MHz Order of Use: - 1. fixed primary and mobile secondary bands - 2. fixed and mobile primary bands - 3. fixed secondary, mobile primary bands - 4. fixed and mobile secondary, others primary - up to 6 frequencies - preference given to systems providing maximum service to public - time-sharing of frequencies encouraged	30-890 MHz - up to 6 frequencies in any band allocated to fixed, and/or mobile primary or secondary
Private Radio Paging	30-890 MHz - no fixed links	30-890 MHz - fixed primary bands only - up to 2 frequencies	30-890 MHz - up to 6 frequencies in any band allocated fixed and mobile

NOTE: Radio linking is permitted in the band 216-220 MHz only in areas 170 km from the Coastal and Great Lakes areas.

. . . Continued

CHART I
(continued)

SYSTEM	AREAS OF INTENSIVE MOBILE USE	AREAS OF MODERATE MOBILE USE	AREAS OF LIGHT MOBILE USE
Government Services	30-890 MHz - 1. fixed primary and mobile secondary bands - 2. fixed and mobile primary - 3. fixed secondary, mobile primary - 4. fixed and mobile secondary others primary - sharing among government users is encouraged on links not required for exclusive use	30-890 MHz - 1. fixed primary, mobile secondary bands - 2. fixed and mobile primary - 3. fixed secondary, mobile primary - 4. fixed and mobile secondary others primary - sharing among government users is encouraged on links not required for exclusive use	30-890 MHz - frequency pairs in any band allocated to fixed and fixed mobile services
Broadcast Auxiliary	The bands 450-451 MHz and 455-456 MHz as indicated in SRSP-501 are available for all areas.		

Policy for the Licensing of Mobile Radio Trunked Systems

Introduction

On June 5, 1982, the Department of Communications published a gazette notice (DGTN 003-82/DGTR 009-82) for public comment in the Canada Gazette Part I entitled "Proposed Policy for the Licensing of Mobile Radio Trunked Systems". In this notice, some proposals concerning the licensing of a relatively new type of radio system - the trunked mobile radio* were presented. Based on the review and analysis of the public submissions made in response to these proposals, the policy guidelines for the licensing of trunked systems in the new bands (421-430 MHz, 806-821 MHz and 851-866 MHz) were established and are described below. Generally, these same trunked radio system guidelines will be applied for the authorization of all new mobile radio trunked systems or refurbishment of any existing discrete channel mobile systems in any of the frequency bands used for land mobile service.

Discussion

Ten public submissions were received in response to the June, 1982 gazette notice. Some respondents felt that trunking should not be mandatory for systems requiring more than three channels in the urban areas for all types of users. Some briefs noted usage requirements and provided reasons for which trunking of channels would not be appropriate. In response, the Department has now modified the proposed mandatory trunking requirement to permit case by case exceptions to users where either advantages of trunking would not be achieved or where trunking would not be suitable for the operation of the system.

Other respondents suggested that the threshold where trunking of discrete channel systems would be required should be four or five. Since in the notice, it was proposed to use trunking for systems requiring more than three channels, in essence the Department's proposal was that systems requiring four or more discrete channels should be trunked. Thus, no change has been made in the Department's proposal.

On the issue of standardization of the signalling/control channel format, there was universal opposition. The reasons given were sufficient to convince the Department, that at this time, no standardization was necessary or desireable and this aspect of the proposal has now been deleted.

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*A trunked mobile radio is one in which the communications traffic may pass through any one of the "trunked group of channels" selected automatically by the system.

Policy Guidelines

The comments discussed above and others were taken into consideration in establishing the following policy guidelines for trunked mobile radio systems. Generally, these same trunked radio system guidelines will be applied for the authorization of all new mobile radio trunked systems or refurbishment of any existing discrete channel mobile systems in any of the frequency bands used for land mobile service.

(i) Since trunked systems are expected to be spectrally more efficient (allowing a greater number of mobiles/channel to obtain service in comparison with conventional systems) and since they are expected to provide improved quality of service (e.g. reduced waiting time, privacy, no manual monitoring of channels required for access), operation of such systems will be encouraged in major urban areas and any other areas determined by a Regional office of the Department where there is, or there is forecast to be, intensive mobile radio use of the bands. Generally, in areas within a circle of radius 120 km around the indicated Census Metropolitan Areas (Vancouver, Victoria, Calgary, Edmonton, Windsor, London, Kitchener, Hamilton, Toronto, St. Catharines/Niagara Falls, Oshawa, Montreal), new mobile system applications requiring more than three channels for communication within the first three years of operation in any mobile frequency band including the 421-430 and 806-890 MHz bands must use trunking as a condition of licence except as noted below.

Furthermore, in these metropolitan areas, for current licensees using more than three discrete channels to cover the same service area, trunking will be encouraged if major system revision, such as replacement of equipment or integration of several discrete channel systems is proposed, regardless of the frequency band of operation.

For systems with specialized requirements whose applicants can satisfy the Department that trunking would not be expected to increase spectrum utilization or for systems where applicants can satisfy the Department that trunking would not be appropriate for their usage, trunking will not be a condition of licence. Applications for such systems will be processed on a case by case basis.

In the areas of moderate mobile use (Saskatoon, Regina, Winnipeg, Thunder Bay, Sudbury, Ottawa-Hull, Ouebec, Chicoutimi, Sherbrooke, Saint John, Halifax, St John's), trunking of channels would be encouraged in all mobile frequency bands for systems requiring more than three channels but not made a condition of licence.

(ii) Applications for trunked systems are invited in the 400 MHz and 800 MHz bands from all those eligible for licensing for land mobile stations for the 24 urban areas* of intensive and moderate mobile use listed above by April 1, 1983. In addition to the standard application form, the applicant should provide the following information.

(a) Justification for the need of the system, i.e., purpose and need for the system, public interest served and any other information which would support need for the proposed system.

(b) System description, including technical and operational details.

(c) Number of channels required initially and a growth plan for the system in terms of expected number of channels, number of subscribers to be served at the end of each year for a five year period after start of operation of the system.

(d) Implementation plans for the proposed system in terms of expected dates for start and completion of construction.

(e) Expected quality of service in terms of average waiting time or some other suitable parameter based on user traffic characteristics.

(f) Information concerning existing systems authorized to the applicant in terms of number of channels, channel loading, area of operations.

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* Due to Canada/U.S. sharing considerations, as shown in Figure 1(a), the channels specifically set aside in the 400 MHz band for trunked systems will not be available in the area between 81°W and 85°W within the coordination zone including London and Windsor.

Applications received by the closing date will be evaluated by the Department and the applicants will be informed of the results of this evaluation, normally, within 90 to 120 days after the closing date for the receipt of the application. Applications received after the closing date will be processed on a first-come-first-served basis depending on the availability of the channels and the area under consideration for the provision of the service.

(iii) For trunked systems in the 421-430 MHz and the 806-890 MHz band, the minimum number of frequencies assigned will be four and the maximum number five. The systems authorized are expected to be installed and in operation within one year from the date of granting of licence. The frequencies authorized should at least achieve a loading of 70% of the minimum loading criteria during the term of the licence. In cases of non-compliance, appropriate corrective action will be taken by the Department. In the 800 MHz band, additional trunked frequency pairs may be authorized to those licensees whose systems have achieved a loading of ninety percent or more of the loading criteria referred to above or to those licensees who can similarly justify additional channels.

(iv) In the 421-430 MHz band, only one system with a maximum of five duplex channels will be authorized to a licensee in a given area. Applicants anticipating eventual system growth to exceed five channels should plan their operations in the 806-890 MHz band.

(v) Since the use of trunked systems is in its formative stages, the Department would greatly appreciate information regarding the actually realized spectrum efficiency and operational advantages of such systems. For this reason, the Department will require trunked system licensees to provide a brief annual report for the first licence term (five years). This report would contain information on:

- number of subscribers served;

- user's reaction to system features, quality of service, additional cost in comparison with non-trunked systems;

- technical performance of the system;

- any changes in the original application submitted to the Department;

- other relevant technical and operational information which would help in orienting departmental policies and standards concerning trunked systems to the best advantage of the public and industry.

CRITERIA FOR THE EVALUATION OF APPLICATIONS FOR TRUNKED MOBILE RADIO SYSTEMS

CRITERIA	IMPORTANCE
A) Need for Proposed System	
Evaluation of the need for the proposed system[1]	High
- intended purpose and clientel of the system	
- public interest served	
- analysis of market forecasts or projections supplied by the applicant (i.e. where the customers will come from.)	
- analysis of the number of trunked RF channels planned and proposed loading of the system. (The minimum number of RF channels is four and the minimum loading should reach 70% of the current DOC guideline[2] within 3 to 5 years of granting the licence [at the discretion of the region]).	
- review of the degree of use of existing systems owned by applicant, the growth of subscribers in these systems.	
- indication of the willingness of the applicant to release unneeded channel assignments.	
B) Technical Considerations	
- Availability of frequency spectrum for Trunked Systems.	Mandatory
- Type approved equipment is proposed for usage.	Mandatory

Note 1: The need for each proposed trunking system must be fully justified to the satisfaction of the District Manager or Regional Office. Applications meeting the mandatory requirements should not be accepted simply because frequency spectrum is available.

Note 2: The current loading guidelines for trunked systems are found in section 6.2 of the Implementation of the mobile service, including trunked radio systems, in the bands 406.-410 MHz, 420-430 MHz, 806-821 MHz and 851-866 MHz. (Safety Services, 50 mobiles per channel; other applicants, 90 mobiles per channel.)

CRITERIA	IMPORTANCE
- System design to provide appropriate coverage of the intended service area. (i.e. ERP, antenna height, base station location are appropriate for area and market to be served).	High
- Evaluation of the spectrum efficiency of trunking system used (i.e. information transfer/transmission time; specific signalling and voice channel arrangements.)	High
- On an area basis, systems with the same signalling[3] format should be assigned the same groups of trunking channels, to the extent possible.	Medium
C) Service	
- Only those applications primarily or solely intended to provide (as opposed to radiotelephone interconnected) dispatch services are to be authorized.	Mandatory
- Evaluation of proposed grade of service; average waiting time and loading in the busy hour.	High
- Evaluation of maintenance procedures.	Medium
- Evaluation of operational techniques for providing service when the system is overloaded.	Medium
D) System Inauguration and Expansion	
- Evaluation of the proposed plans for the startup and completion of construction. (i.e. systems authorized are expected to be installed and in service within one year from the date of granting the licence.)	High
- Evaluation of the projected five-year-growth pattern of subscribers to be served and channel requirements.	High

Note 3: There are at least 3 incompatible trunking signalling and control standards (i.e. Johnson, General Electric, Motorola, etc.). This criteria encourages regions to assign applicants proposing to use the same trunk signalling standards to the same trunk group of frequencies. In future this would allow roaming service through the "compatible" are (suggested areas as Calgary/Edmonton, Toronto/Hamilton, Montreal/Ouebec, etc.)

CRITERIA	IMPORTANCE
E) Experience	
- Evaluation of the applicant's experience in providing radiocommunications services (new entries should not be unduly discriminated against).	Medium
F) Competition	
- Applicants for systems will be initially granted only one trunked system per market area in either the 400 or 800 MHz band (i.e. not in both bands). However, this requirement may be waived at the discretion of the RD. Applicants forecasting expansion beyond 5 RF channels should be advised to select the 800 MHz band.	Mandatory