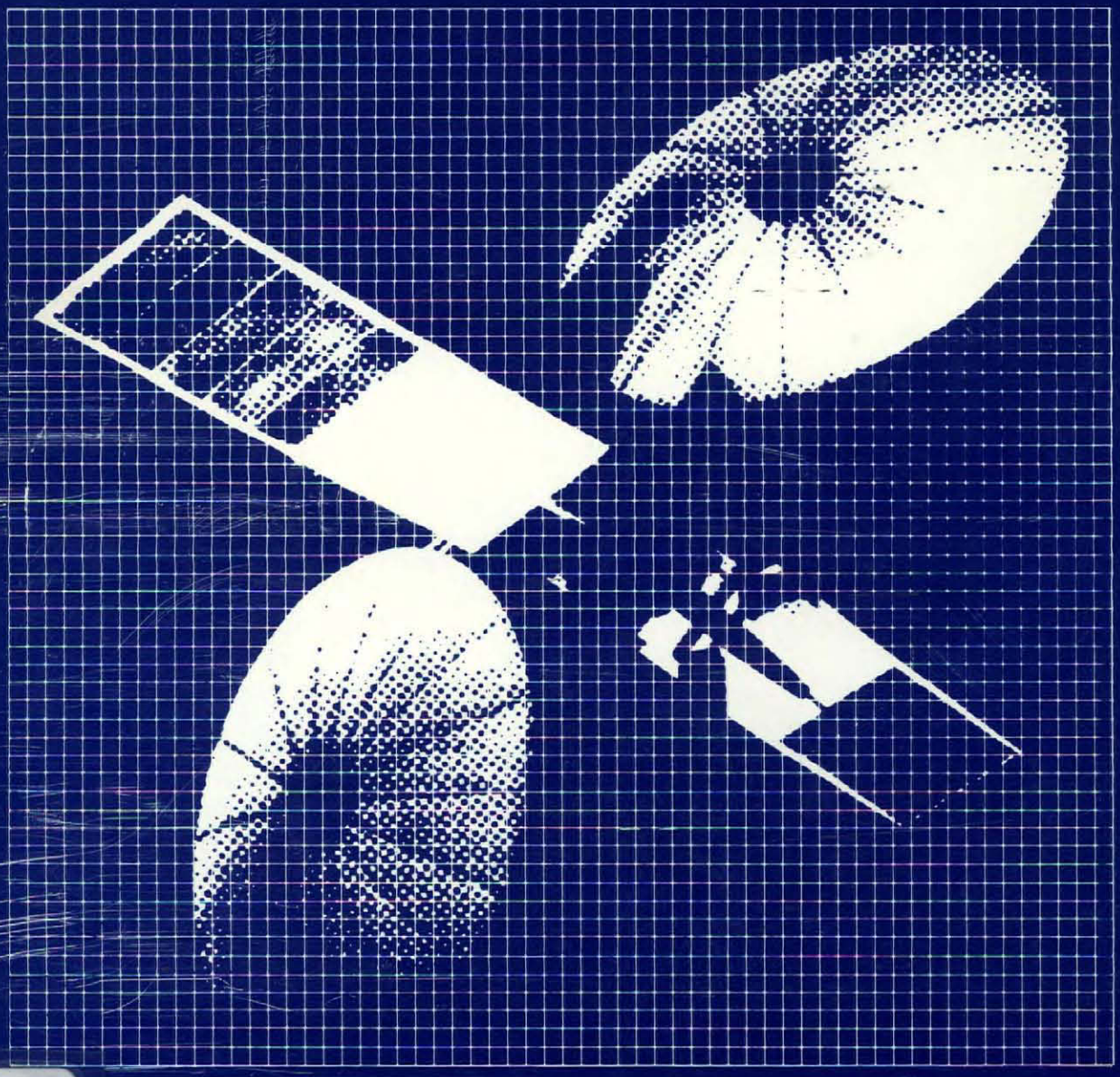
Public Comments
on
Doc Gazette Notices

Government of Canada
Department of Communications

Gouvernement du Canada
Ministère des Communications



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Canada

Public Comments
on
DOC Gazette Notices

(1)

PUBLIC COMMENTS

ON DOC GAZETTE NOTICES

FOR MOBILE

SATELLITE FREQUENCY

ALLOCATIONS

SEPTEMBER 1984

Radio Act

Canada Gazette, Part I

Department of Communications

DGTP-003-84/DGTR-014-84

Spectrum Reallocation Relating
to the Mobile Satellite Service

Only a limited number of frequency bands were allocated to the mobile satellite service at the 1979 World Administrative Radio Conference of the International Telecommunication Union (ITU). Furthermore, many of these allocations can only be used subject to agreement with other affected administrations or on a restricted basis. Such an agreement may be difficult to achieve as terrestrial radio systems currently operating or planned for implementation in the near future, cannot easily share the same frequency band without causing and/or receiving interference from the operations of a mobile satellite system. This is due to the fact that with current technology, a mobile satellite system must have exclusive use of frequency spectrum over very wide geographic regions.

As there are extremely limited frequency band options available within the ITU Radio Regulations for mobile satellite operations and as a result of a number of considerations which follow, it is proposed to amend the Canadian Table of Frequency Allocations by adding on a primary basis the mobile satellite service in the frequency bands 821-825, 845-851 and 866-870 MHz. Internationally, use of the allocation to the mobile satellite service would still require coordination with all affected administrations under the procedure set out in Article 14 as noted in footnote 700. The mobile service would be reduced to secondary status in the bands, 821-825 and 866-870 MHz and the secondary fixed service would be deleted in all three frequency bands. It is proposed to leave the existing primary allocation for mobile service in the 845-851 MHz band but refrain from licensing terrestrial mobile services pending clarification of future needs. If, due to some eventuality, the mobile satellite service is not implemented as currently proposed in the Mobile Satellite (MSAT) Program, the allocations in these sub-bands would be reevaluated.

On October 15, 1982, the Department took the first steps in designating the frequency bands 821-825 and 866-870 MHz for use by the MSAT system. After public consultation, the Department issued Gazette Notice DGTN-006-82/DGTR-017-82 on that date which was entitled: Cellular Mobile Radio Policy and Call for Licence Applications and dealt primarily with the allocations of frequency spectrum for terrestrial cellular mobile in the 800 MHz band. As part of this decision, however, the Notice indicated that an Advance Publication of Information was to be forwarded to the ITU to begin the process of obtaining international regulatory support for a Canadian mobile satellite system intended to operate in the bands 821-825 and 866-870 MHz in Region 2.

The proposed frequency allocation changes specified above are given below.

Canadian Table of Frequency Allocations

Existing (MHz)	Proposed (MHz)
806-890 MOBILE Fixed 700 C11	806-821 MOBILE Fixed C11
	821-825 Mobile MOBILE-SATELLITE (except aeronautical mobile-satellite) 700 C11
	825-845 MOBILE Fixed C11
	845-851 MOBILE MOBILE-SATELLITE (except aeronautical mobile-satellite) 700 C11
	851-866 MOBILE Fixed C11
	866-870 Mobile MOBILE-SATELLITE (except aeronautical mobile-satellite) 700 C11
	870-890 MOBILE Fixed C11

Footnotes

C11 Television broadcast stations licensed prior to January 1, 1979, to operate in the frequency band 806-890 MHz (channels 70 to 83) will continue to operate on a primary basis until their reassignment to a lower frequency.

700 Additional allocation: in Region 2, the band 806-890 MHz is also allocated to the mobile-satellite, except aeronautical mobile-satellite, service on a primary basis. The use of this service is intended for operation within national boundaries and subject to agreement obtained under the procedure set forth in Article 14.

These spectrum allocation revisions are directly related to the planning by Canada for future mobile satellite systems and are proposed to allow for their ultimate operation in the three sub-bands noted above. These proposals also limit use in this range of spectrum by the mobile satellite service in Canada to the noted 3 sub-bands by the removal of the Footnote 700 from the Canadian Table of Frequency Allocations in all but these sub-bands. This would permit the development of a mobile satellite system in these three sub-bands without the co-ordination restraints of terrestrial systems in Canada. At the same time this would allow for the unhindered development of conventional and trunked mobile radio systems and cellular radio-telephone systems in the remaining spectrum without the prospect of coordination with a mobile satellite operation. A change to the Canadian Table of Frequency Allocations will also be proposed in a fourth band, 890-896 MHz, to add the mobile satellite service on a shared basis with the mobile service. This proposal will appear in a separate proceeding dealing with an overall spectrum utilization policy for the band 890-960 MHz. Of the various possible mobile satellite bands, the use by a mobile satellite system of the three noted above is regarded as an appropriate choice in terms of Canadian usage due to consideration of current ITU Radio Regulations, technical feasibility, the clear (currently unassigned/unused) spectrum and the possibility of compatability between mobile satellite system operation and terrestrial mobile services in the 800 MHz band.

In order to meet the projected long-term spectrum requirement for Canadian mobile-satellite operations, the Department of Communications also wishes to propose for comment a change in allocation in the 1500 MHz band to allow for a mobile satellite operation. As aeronautical mobile satellite users do not appear to have large requirements, it is proposed to broaden the current aeronautical mobile satellite allocation in these bands to the more general mobile satellite allocation which embraces the land, aeronautical and maritime mobile satellite operations.

The proposed changes are given below.

Canadian Table of Frequency Allocations

Existing (MHz)	Proposed (MHz)
1544-1545 MOBILE-SATELLITE (space-to-Earth) 722 728	1544-1559 MOBILE-SATELLITE (space-to-Earth) 722 728 729
1545-1559 AERONAUTICAL MOBILE-SATELLITE(R) (space-to-Earth) 722 729	
1645.5-1646.5 MOBILE-SATELLITE (Earth-to-space) 722 728	1645.5-1660 MOBILE-SATELLITE (Earth-to-Space) 722 728 735
1646.5-1660 AERONAUTICAL MOBILE-SATELLITE (R) (Earth-to-space) 722 735	
1660-1660.5 AERONAUTICAL MOBILE-SATELLITE (R) (Earth-to-space) RADIO ASTRONOMY 722 735 736	1660-1660.5 MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY 722 735 736

Footnotes

722 In the bands 1400-1727 MHz, 101-120 GHz and 197-220 GHz, passive research is being conducted by some countries in a programme for the search for intentional emissions of extra-terrestrial origin.

728 The use of the bands 1544-1545 MHz (space-to-Earth) and 1645.5-1646.5 MHz (Earth-to-space) by the mobile-satellite service is limited to distress and safety operations.

729 **Transmissions in the band 1545-1559 MHz from terrestrial aeronautical stations directly to aircraft stations, or between aircraft stations, in the aeronautical mobile (R) service are also authorized when such transmissions are used to extend or supplement the satellite-to-aircraft links.**

735 **Transmissions in the band 1646.5-1660.5 MHz from aircraft stations in the aeronautical mobile (R) service directly to terrestrial aeronautical stations, or between aircraft stations, are also authorized when such transmissions are used to extend or supplement the aircraft-to-satellite links.**

736 In making assignments to stations of other services to which the band 1660-1670 MHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

These proposed allocations, if accepted in this gazetting, will be considered in developing proposals to the next appropriate World Administrative Radio Conference. In the interim, any Canadian use would require agreement with neighbouring countries that might be affected.

The Department now invites written submissions from all interested parties on this proposed spectrum reallocation relating to the mobile satellite service.

Submissions should be addressed to the Director General, Telecommunications Policy Branch, Department of Communications, 300 Slater Street, Ottawa, Ontario K1A 0C8 and, to ensure consideration, must be postmarked on or before August 17, 1984 or received by other means by the same date. All representations must cite the Canada Gazette Part I publication date and the Notice reference number.

Comments received in response to this Notice will be made available for public viewing at the Department of Communications Library, 300 Slater Street, Ottawa for a period of one year from the close of comments and at the Regional Offices of the Department in Moncton, Montreal, Toronto, Winnipeg, and Vancouver for a period of six months from the close of comments.

Dated at Ottawa, this 4th day of May, 1984.

Original Signed by
Original signé par

N. Ahmed
Director
Engineering Programs
Telecommunciations Regulatory Service
Department of Communications

Original Signed by
Original signé par

V. Rill
Director General
Telecommunications Policy Branch
Department of Communications

DGTP-006-84/TRS-015-84*

RADIO ACT

Canada Gazette, Part I
Department of Communications
Proposed Changes to the Canadian Table of Frequency Allocations
and
Proposed Spectrum Utilization Policy
For the Fixed, Mobile, Radiolocation,
Mobile Satellite and Amateur Services
in the Band 890-960 MHz

The Department of Communications has noted the continuing general demand for mobile services in the band 890-960 MHz. Action was taken last year to accommodate specific demands for internationally compatible mobile services in this frequency range. In March, 1983, through Gazette Notice DGTN-003-83/DGTR-002-83, a radio systems policy proposing the use of the bands, 898-902 and 937-941 MHz for the Personal Radio Service was issued for public comment. During the same period of time, a separate Canada Gazette Notice DGTN-001-83/DGTR-001-83, proposed the introduction of an air/ground public correspondence service in the bands 896-898 and 941-943 MHz.

The development of internationally compatible mobile radio systems (e.g. Personal Radio Service, Air/Ground Public Correspondence) is still under study but finalization of these proposed radio systems policies is anticipated before the end of the year. Nevertheless, the pressures for accommodation of these and other services in this frequency band continue to increase. At the same time, existing Fixed Service users of this frequency band need as much time as possible to consider their options and determine if they wish to plan a move to higher frequency bands. Hence, the Department is releasing for public comment an overall policy proposal for the future use of the band 890-960 MHz in order that a revised plan for the future accommodation of all interrelated radio uses can be formulated.

In addition to restating the radio systems policy proposals for Air/Ground Public Correspondence and the Personal Radio Service, this spectrum utilization proposal provides for radio paging, radiolocation services for Canadian defence purposes and very low capacity fixed systems including multi-point communication systems. Additionally, it is proposed that one 6 MHz frequency band be reserved for mobile or potential future mobile satellite operations and that certain other bands be held in reserve for mobile services, pending future developments. The use of the Studio Transmitter Link band, 956-960 MHz is retained.

*The designation TRS replaces the previous designation DGTR.

The proposals outlined in this Gazette Notice are more fully specified in the public consultation document SP 300.8 now being released. As a convenience in reviewing this document, the reader should note that the text is based on the Policy for the Utilization of the 0.890-10.68 GHz Radio Spectrum by the Fixed Service, released in December, 1982. The proposals made in this current proceeding consist of changes to the above noted Policy relative to the band 890-960 MHz.

The text of the proposals has been annotated in the following manner:

- new proposed text is underlined with dashes and marked "Add"
- text that it is proposed to delete is dashed out and marked "Delete"
- a "Reason", which will not appear in the final version, is given for any proposed change
- a vertical bar in the left margin indicates the limits of a notation.

The provisions for Fixed Service as identified in this proposed SP 300.8 are limited to very low capacity systems. Consequently, comments are invited with respect to the requirements of Radio Standard Procedure 113 (Application Procedures for Planned Radio Stations Above 890 MHz in the Terrestrial Fixed Service) with respect to its application to the licensing of low capacity systems proposed for use in the band 890-960 MHz. This refers in particular to the need for an applicant to demonstrate that some public interest and need will be served by the new facility and that there is significant advantage in terms of cost, convenience and quality compared with service available from existing facilities.

If changes to the Fixed Service bands result from the review of responses to this Gazette Notice, the frequency channelling arrangement for the Fixed Service (SRSP 310, Issue 1) will be revised through a consultative process. If the major revisions proposed to the bands used by the Fixed Service are accepted it will not be possible to have any part of this new channelling arrangement coincide directly with the existing one. For this reason, and because of the need to avoid adding Fixed systems to bands proposed for other radio services, it has been decided to suspend all licensing under SRSP 310 of new and pending applications for Fixed systems in the band 890-960 MHz except for studio transmitter links in the band 956-960 MHz. The suspension will apply from the date of publication of this Gazette Notice until the completion of the consultative process even if an applicant should request licensing on a non-standard basis. However, in the interim, applications that follow the intent of the band plan presented in this proposal will be considered for licensing on a non-standard basis.

This suspension of licensing under SRSP 310 will be reviewed during the consultative process and will likely become permanent if some or all of the new service proposals are accepted.

Copies of public consultation document SP 300.8 may be obtained from Information Services, Department of Communications, 300 Slater Street, Ottawa, Ontario, K1A 0C8 (613-995-8185) or from Departmental Regional Offices in Moncton, Montreal, Toronto, Winnipeg and Vancouver. Submissions should be addressed to the Director General, Telecommunications Policy Branch, Department of Communications, 300 Slater Street, Ottawa, Ontario, K1A 0C8 and, to ensure consideration, must be postmarked on or before August 31, 1984 or received by other means by the same date. All representations must cite the Canada Gazette Part I publication date and the reference number of this Notice.

Comments received in response to this Notice will be made available for public viewing at the Department of Communications Library, 300 Slater Street, Ottawa for a period of one year until August 31, 1985 and at the Regional Offices of the Department in Moncton, Montreal, Toronto, Winnipeg, and Vancouver for a period of six months until February 28, 1985.

Dated at Ottawa, this 25th day of May.

S.N. Ahmed
Director
Engineering Programs
Department of Communications

V. Hill
Director General
Telecommunications Policy Branch
Department of Communications

A. INDUSTRIES

ADGA Systems International Limited	13 August 1984
(The) Canadian Association of Broadcasters	15 August 1984
(The) Canadian Association of Broadcasters	16 August 1984
Canadian Broadcasting Corp.	15 August 1984
(The) Canadian Radio Common Carriers Association	10 August 1984
CNX/CN Trucking	3 August 1984
Electrical and Electronic Manufacturers Association	14 August 1984
Electrical and Electronic Manufacturers Association	29 August 1984
J.D. Irving Limited	9 August 1984
J.E. Transports Listowel Transport Lines Ltd.	23 July 1984
MILLMAN'S Communication Service (1964) Ltd.	10 August 1984
MDI - Mobile Data International Inc.	16 August 1984
Mobile Satellite Corporation MOBILSAT	13 August 1984
SCOTCOMM Radio Inc.	15 August 1984
SED Systems Inc.	15 August 1984
Spar Aerospace Limited	17 August 1984
Telecom Canada	13 August 1984
Telecom Canada	31 August 1984
Telesat Canada	17 August 1984
Telesat Canada	31 August 1984
Thompson Transport Ltd.	7 August 1984
West Can Electronic Services Ltd.	13 August 1984

PRIVATE INDUSTRY

(ALPHABETICALLY)

adga
group • groupe

Engineers and Systems Analysts — Ingénieurs et Analystes

DARTMOUTH (902) 463-8585 | MONTREAL (514) 683-3682 | OTTAWA (613) 237-3022 | TORONTO (416) 736-0285 | VANCOUVER (604) 943-7321

August 13, 1984
Our File: CSI-126

Director General
Telecommunications Policy Branch
Department of Communications
300 Slater Street
Ottawa, Ontario
K1A 0C8

Ref: DGTP-003-84/DGTR-014-84
DGTP-006-84/TRS-015-84

Dear Sir:

In response to your request for comment concerning the above referenced Notices in the Canada Gazette, I am pleased to offer the following comments. Whereas I have no objections to the referenced proposals, it is suggested that the following options may be worth your consideration:

1. Once satellite relay is used to the mobile terminal there does not appear to be any strong technical reason to exclude aeronautical satellite services, particularly to light aircraft. In both cases the signal conditions and coverage areas are essentially similar.

2. Since the original MSAT objective of providing mobile equipment compatability with a terrestrial cellular system has been shown to be impractical, the combination of the above services may allow greater flexibility in the assignment of frequency bands.

   As an example, it would appear that overall greater equipment commonality would be obtained if all terrestrial and aeronautical services sharing FM modulation techniques and similar signal conditions be constrained to the 806 to 890 MHz band. This includes the proposed Personal Radio Service and air/ground public correspondence services presently proposed as 898 to 943/937 to 941 and 896 to 898/941 to 943 MHz respectively.

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adga

The 6 MHz bands 896 - 906 and 937 to 943 MHz would then be available for mobile satellite. This may reduce the potential interference to MSAT mobile recievers as a result of the forecast proliferation of cellular base stations transmitters.

3. The above noted change may overcome objections by the proponents of cellular systems since the allocation of the 821 to 825 and 866 to 870 MHz to cellular services could be considered on a case by case basis. This option is excluded if the frequency bands are assigned to satellite services.

Please note that the above comments are the personal viewpoint of the undersigned within the context of your letter request and Notices. As a consulting engineering firm engaged in like system studies and research, ADGA could offer more detailed appreciation of the subject if you wish to retain our services.

Yours truly,

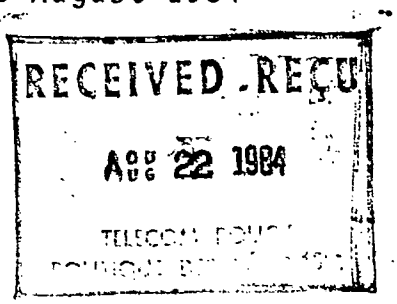
A.E. Waltho, P. Eng.
Director of Engineering
ADGA Systems International Ltd.

AEW/lp

DSRS

The Canadian Association of Broadcasters
L'Association canadienne des radiodiffuseurs
165 Sparks, 8th Floor, Box CP 627, Stn. B
Ottawa, Canada K1P 5S2
(613) 233-4035 Telex 053-3127

15 August 1984



Mr. V. Hill
Director-General
Telecommunications Policy Branch
Department of Communications
300 Slater Street
Journal Tower North
OTTAWA, Ontario
K1A 0C8

Gazette Notice DGTP-003-84/TRS-014-84
of 19 May 84 on MSAT Spectrum Allocations

Dear Mr. Hill:

The Canadian Association of Broadcasters (CAB) has studied with interest, the proposed frequency allocations for mobile-satellite-service outlined in the above notice. The proposed allocations appear to be reasonable and should satisfy both short and longer-term requirements for both the initial and subsequent MSAT programs without constraining to an inordinate degree, other services contained within the 806-890, 1544-1559 and 1645.5-1660.5 MHz bands.

The CAB is aware of continuing pressures by mobile interests, particularly within the USA, to encroach upon broadcasting spectrum, and stresses that no such accommodation should be permitted in Canada. The provisions made by the Department for cellular, trunked and conventional land mobile and now for MSAT, and the spectrum-efficient techniques such as ACSB available for mobile systems should provide for their wants for the foreseeable future. Existing spectrum available to mobile services should provide for increases in traffic of from five to twenty-five times that currently required. MSAT should be a useful adjunct to mobile services, and the Department is to be commended for making adequate provisions for its inclusion.

Yours sincerely,

A.G. Day, P. Eng.
Vice-President
Engineering Services

AGD/lab

The Canadian Association of Broadcasters
L'Association canadienne des radiodiffuseurs
165 Sparks, 8th Floor, Box CP 627, Stn. B
Ottawa, Canada K1P 5S2
(613) 233-4035 Telex 053-3127

August 16, 1984

Mr. V. Hill
Director-General
Telecommunications Policy Branch
Department of Communications
300 Slater Street
Journal Tower North
OTTAWA, Ontario
K1A 0C8

Gazette Notice DGTP-006-84/TRS-015-84
of 2 June 1984 on Services in the
890-960 MHz Band.

Dear Mr. Hill:

The Canadian Association of Broadcasters (CAB) is pleased to respond to the above notice in the Canada Gazette, Part 1. The various allocation and policy refinements are as a whole, reasonable and satisfactory. Due to previous public consultation by the Department, the document SP 300.8 contains no surprises, and the changes proposed will not be of particular concern to broadcasting interests. CAB welcomes the provisions made for new and innovative services, and for trans-border compatibility of continent-wide services. Following are a few comments on specific points.

Mobile Satellite Service

The potential pairing of 890-896 MHz with the 845-851 MHz allocation planned for second generation MSAT makes good sense in that the latter band would be relatively useless without an equivalent band for two-way service. This use would not likely occur until well into the 1990's since the first generation MSAT is still some years away. This provides more than adequate time for amortization of fixed equipment or for its relocation in the spectrum.

VLC and Low Capacity Systems

The suspension of licensing of low capacity (LC) systems under SRSP 310 and the encouragement of only very low capacity (VLC) systems at appropriate frequencies in the band is recognized as somewhat of a negative result for common-carriers. However the Department has provided alternative bands for LC operations and an adequate amortization period, and the benefits for other spectrum users far outweigh this disadvantage.

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Studio-Transmitter Links

With licensing of STL's in the 1.7 GHz band becoming possible and equipment finally becoming available this year, the pressure on the 956-960 MHz band should diminish. Nonetheless, there will be circumstances where assignment in this band would still be highly desirable, and the provisions made for existing and new STL's are welcome.

CAB notes that sharing of 956-960 MHz with VLC systems is now proposed on a first-come first-served basis. The displacement of VLC assignments from less-desirable parts of the band will probably result in early requirements by such licensees for assignments at these frequencies. In some locations, STL's have been licensed at frequencies between 950 and 956 MHz because of local circumstances, and it would seem prudent to extend possible STL assignments into the 947-956 MHz FIXED band, when desirable, under the policy. More flexibility in working out local problems would be obtained by this step.

ISM Band, 902-928 MHz

While ISM use in Region 2 is permitted only by footnote in the ITU Table (No. 707), it can have serious effects on other services at these frequencies. The viability of services such as multipoint communications systems (MCS) could be seriously affected by ISM interference, with no recourse for the MCS licensee if such interference proved harmful. Since ISM is in effect, primary in Canada, it should be listed in the Canadian allocations.

Air-Ground Public Correspondence

CAB has no objection to the frequencies allocated to this service, 896-898 and 941-943 MHz. However, this service is indeed as much an aeronautical mobile service as cellular radio is a land mobile service and it is noted that neither the ITU nor the Canadian table permits aeronautical mobile except in the top one MHz of these frequencies. CAB believes that the Canadian (and USA) domestic tables should be changed to honestly portray the real status of these frequencies in North America.

CAB has no comments to offer on other elements of the policy, but stands ready to assist in any way, if such help is desired by the Department.

Yours sincerely,

A.G. Day, P. Eng.
Vice-President
Engineering Services

Canadian Broadcasting Corporation

Société Radio-Canada

August 15, 1984

Mr. V. Hill
Director General
Telecommunications Policy Branch
Department of Communications
300 Slater Street
Ottawa, Ontario
K1A 0C8

Re: Canada Gazette Part I published May 19, 1984
Notice No. DGTP-003-84/TRS-014-84

Dear Sir:

The Corporation has no objection to the spectrum allocation proposed in this Gazette Notice and welcomes the suggested change to the spectrum allocation to accommodate the mobile satellite services.

The Corporation strongly recommends that adequate spectrum be allocated to Direct Broadcasting from Satellites for radio.

Yours sincerely,

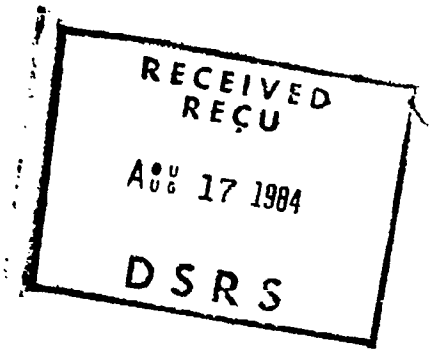
for D. L. Garforth, P. Eng.
Director of Engineering
Transmission Systems
Engineering Headquarters
7925 Cote St. Luc Road
Montreal, Quebec
H4W 1R5

WCK/GEM

THE CANADIAN RADIO COMMON CARRIERS ASSOCIATION
ASSOCIATION DE RADIOCOMMUNICATEURS DU CANADA

214 Merton Street, Suite 201, Toronto, Ontario M4S 1A6
Tel: (416) 483-5176

August 10, 1984



Mr. V. Hill,
Director General,
Telecommunications Policy Branch,
Department of Communications,
300 Slater Street,
OTTAWA, Ontario
K1A 0C8

Dear Mr. Hill:

Re: Canada Gazette Part I, May 19, 1984
Notice DGTP-003-84/DGTR-014-84

With respect to the above-referenced Canada Gazette Notice on the subject of Spectrum Reallocation Relating to the Mobile Satellite Service, The Canadian Radio Common Carriers Association would like to go on record as supporting the proposals of the Department on the revisions to the Canadian Table of Frequency Allocations.

As you are aware, the Association has been working closely with the Department and Telesat with a view to becoming a service provider to mobile satellite users during the commercial phase after launch, and we are encouraged with the way in which all elements of this important project have been considered. As well, we feel assured that DOC has worked diligently with NASA to coordinate the spectrum allocation plan so as to make optimum use of available frequencies.

However, we are also aware that pressure is being brought to bear on the Federal Communications Commission in the United States to allocate the bands being considered for MSAT to other conventional and mobile types of services such as cellular and trunked radio because of a shortage of frequencies in bands currently in use for these services.

We do not anticipate such a shortage of spectrum availability for these conventional and cellular services here in Canada in the 806-890 MHz band. We feel the Department has made adequate provision of spectrum, at least at the present time, for the development of these spectrum-efficient modes of communication, as well as for the introduction of MSAT services in the latter part of the decade.

As service providers, we do not feel that we are fully capable of commenting on the pros and cons of a particular allocation for MSAT services, but rather that such comments should come from the manufacturers of mobile satellite equipment and from the space segment operator, Telesat. The RCCs, as resellers of airtime and marketers of equipment, will participate actively in the Post-Launch Program no matter what the spectrum

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allocation plan may be, and we trust that others who are more concerned with these issues will register their comments with the Department in response to this notice.

We will continue to support the Department in the development of a commercially viable mobile satellite service for Canada as we believe that in a country as vast as this such a communications service is desirable, indeed essential for remote areas.

You may be assured of our continuing interest in the work of the DOC/CRCCA Working Group on MSAT, and we applaud the Department on the manner in which this important program has been developed to date.

Yours sincerely,

Meline Batten

Meline C. Batten,
Association Manager

CNX/CN TRUCKING

401 The West Mall, 4th Floor
Etobicoke, Ontario
M9C 5J9

Reference N/réf.

3 August 1984

Director General
Telecommunications Policy Branch
Department of Communications
300 Slater Street
Ottawa, Ont.
K1A 0C8

Dear Sir:

RE: DGTP - 003-84/DGTR-014-84, DGTP-006-84/TRS-015-84
File No. 6980-14-7 and FM Draper, Manager, MSAT
Program Planning & Working Groups letter to D.F. Dumaresq
Director - Terminal Services, CNX/CNT - 6 July /84

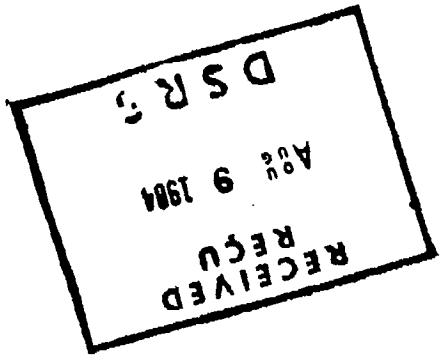
We believe the MSAT program, as outlined in the Government of Canada Department of Communications "MSAT Service Description" Booklet, will provide a superior method of communications and Data Services for a national Trucking Company such as ours and look eagerly forward to participation in the trials for which we have made application to the Federal Department of Communications.

We support the MSAT program.

Yours truly,

S.H. Rowe
Manager, Terminal Projects

cc: Mr. D.F. Dumaresq
Director - Terminal Services - CNX/CNT
401 The West Mall,
Etobicoke, Ont. M9C 5J9



Electrical and Electronic Manufacturers Association of Canada

77 Metcalfe Street, Suite 809, Ottawa, Ontario K1P 5L6 (613) 237-6847

August 14, 1984

Director General
National Telecommunications Branch
Department of Communications
300 Slater Street
Ottawa, Ontario
K1A 0C8

Subject: Spectrum Reallocation Relating to the Mobile Satellite Service

Dear Sir:

EEMAC welcomes the opportunity of commenting on Gazette notice DGTP-003-84/TRS-014-84. The Land Mobile and Marine Technical Commmittee of EEMAC has a direct concern in this area of the spectrum.

Attached is our submission for your information and consideration.

Yours sincerely,

Albert F. Goetz
Technical Liaison Officer

DGTP-003-84/DGTR-014-84

SPECTRUM RE-ALLOCATION RELATING TO THE MOBILE SATELLITE SERVICE

EEMAC is pleased to comment on the proposed frequency allocations for the Mobile Satellite Service as contained in DOC's gazetted notice DGTP-003-84/DGTR-014-84.

EEMAC, whose membership contains Canada's Land Mobile Radio manufacturers and associated manufacturers who are suppliers to this industry, is vitally interested in any proposal that affects the future utilization of this important and non-renewable resource. It is to everyone's benefit, both manufacturers as well as users, that this resource be used as efficiently as possible because of the growing need for mobile communications by Canadians.

Although some relief has been achieved by the opening of new spectrum in the 400 and 800 MHz bands for terrestrial land mobile services, the growing demand for mobile communications in the major urban areas of Canada will soon fill this new spectrum. After this is gone, there is little opportunity for more, particularly for terrestrial land mobile use. Going higher in frequency appears impractical due to severe propogation problems with multi-path signals to moving mobiles above 1 GHz. The alternative is to use the currently available and the more terrestrially useable spectrum more effectively.

In the first part of the subject notice, the Department proposes reallocation of 12 MHz of terrestrially desirable (and limited) 806-890 MHz spectrum to a mobile satellite system on a primary basis. Although EEMAC recognizes that there may be a need for a Mobile-Satellite communications sytem, particularly if alternative communications are not available, EEMAC does have serious concerns about reallocation of this highly desireable spectrum to a Satellite based service. Our concern is chiefly due to spectral efficiency or the number of users that can be serviced by a given amount of spectrum. Terrestrial land mobile services through the introduction of new technologies such as cellular, trunking, ACSB, etc. have been increasing the ability to put more and more users on a given amount of spectrum. Through control of propogation, terrestrial systems have also been able to re-use the given spectrum many times over.

Unfortunately the very characteristic that makes Satellite Systems attractive, propogation over very large areas (called "footprints"), also makes Satellite Systems very inefficient in spectral re-use as compared to terrestrial systems. For a given amount of spectrum and the same modulation system, terrestrial systems can serve from 13 to 6,800 times more mobile users as compared to a satellite system. (See Appendix A).

This decrease in the number of potential users served is all the more disconcerting since satellite "footprints" will spill-over and illuminate large urban areas as well as the rural areas which are the intended target service areas of the satellite.

This spill-over into the urban areas will effectively prohibit use of large portions of this proposed 12 MHz spectrum just where it will be most required, in the major urban areas of Canada. Due to technical system problems, it is not possible for both terrestrial and satellite services to use the same spectrum in the same service area.

As a result, EEMAC strongly urges that the 800 MHz band not be used for a mobile satellite system. EEMAC recommends that the 806-960 MHz band be preserved for the exclusive use of terrestrial land mobile services because this is the last available spectrum that is suitable for such services. EEMAC further recommends and supports the consideration of 1500 MHz for a potential mobile satellite system. Our reasons for this are :

1. The 1500 MHz band is already allocated world-wide for "Space Operation" (space to earth) by the ITU. The proposed 800 MHz re-allocation is not and is only available in Region 2 and then potentially only to North America. The result of this is a very limited export market particularly since this type of system will be more attractive to countries with less developed Communications Systems and these countries are largely in the other Regions.

2. There is a potential for a shared system with the aeronautical and maritime services at 1500 MHz which would further reduce cost to the user by increasing the subscriber base. Sharing would also provide the benefit of inter-service communications (ie. ship to air, land to air, etc.).

3. The 1500 MHz allocation offers the potential of being able to serve many more users because much more spectrum is available, particularly if it is shared with other services. The proposed 800 MHz spectrum, which is very limited, would inherently restrict the number of users that could be served, thus increasing the costs to the user, not only for the service, but also for the equipment; the cost of which is very volume sensitive.

4. Studies have shown that the mobile satellite subscriber terminal equipment will be unique in design. Different system design criteria's are required by a satellite system as compared to a terrestial system. For terrestial systems, a radio equipment designer designs for "resistance to interference" from powerful, nearby transmitters which occur in the congested land mobile bands. For satellite equipment, on the other hand, the radio designer designs for reception of extremely weak signals. Unfortunately this makes the equipment much more sensitive to interference (ie. low noise figure front ends are typically very wide in band-width).

   Use of 1500 MHz for MSAT would separate the "sensitive" satellite subscriber terminal set from the interference potential of high powered land mobile terrestial transmitters and even broadcast transmissions near 800 MHz.

5. Use of 800 MHz for MSAT was originally proposed because of the potential for a compatible terrestial - satellite service. When this was found to be impossible due to the differing technical requirements, development of a "combination terrestial - satellite" cellular radio was proposed. As a result of rapid cellular radio price reductions, and the continual introduction of new user features; EEMAC believes that it is much more desirable to have a separate radio, each optimized for each service as desired. Combination radios always become compromised in performance as well as user features with no real advantage in cost. Due to the vast differences in satellite subscriber terminal equipment, it is now no longer necessary to pursue the use of 800 MHz as a frequency band because there is now little, if any, commonality between terrestial and satellite terminal equipment.

EEMAC believes that the required subscriber terminal equipment can be provided at 1500 MHz and at a similar cost to that at 800 MHz because cost will be determined largely by the volume of radios manufactured rather than other considerations. Use of 1500 MHz also represents an opportunity to develop a unique Canadian high technology industry with substantial export potential.

6. Since 1500 MHz is approximately twice as small in wavelength as compared to the proposed 800 MHz allocation, antennae at 1500 MHz will be at least one half the size. Conversely for the same physical size antenna structure, the expected gain of the antenna at 1500 MHz will be approximately twice as high as compared to 800 MHz resulting in a more sensitive and powerful system from an RF point of view. This additional system gain could be used to develop smaller antennae for the satellite; smaller "footprints" resulting in more frequency re-use and thus more subscriber capacity, possible conservation of power required to operate the satellite resulting in savings in satellite hardware and operating costs or simply additional system "reserve" adding to improved service coverage to mobile subscribers. Additional system gain could also provide substantial cost savings to mobile subscribers by making the design of mobile terminal equipment less demanding.

7. EEMAC also sees the potential of developing a GaAs device technology in Canada through the development of a market for very low noise GaAs devices at 1500 MHz and beyond. This represents another opportunity to develop a unique Canadian capability in a new and emerging technology.

In conclusion, EEMAC does not oppose the establishment of a mobile satellite service; it does, however, object to the placement of a satellite based service in a frequency band that is highly desirable for terrestial services. This is all the more objectionable because there is no technological reason which dictates this choice when other frequencies are available and at no expected additional cost. Once allocated to a satellite service, these frequencies will forever be lost to the terrestial services to accommodate future growth. EEMAC recommends that the proposed re-allocation of the 800 MHz spectrum for a mobile satellite service not be executed but instead that the use of the 1500 MHz be pursued for use for the proposed MSAT programme. EEMAC believes that substantial benefits will be realized with the use of 1500 MHz instead of 800 MHz as proposed. Additional spectrum availability at 1500 MHz will permit the design of a system that will serve many more users than will ever be possible at 800 MHz. The more Internationally available 1500 MHz spectrum will result in a greater export potential for Canadian manufacturers. Use of 1500 MHz would be more readily adopted by more countries for an MSAT service as compared to terrestially desireable 800 MHz spectrum. Technology developed in Canada at 1500 MHz then would be useable in other areas of the world and not just potentially in Canada.

APPENDIX A

SIMPLE COMPARISON OF SATELLITE AND
TERRESTIAL SYSTEM FREQUENCY RE-USE POTENTIAL

1. SATELLITE SYSTEM

Assume that a satellite has a typical "footprint" (coverage area) of 300 X 500 miles. For purposes of comparison, also assume that this area is rectangular in shape; then the area covered by the "footprint" is 150,000 square miles.

2. TERRESTIAL SYSTEM

a) Most terrestial systems are limited by propogation characteristics, typically providing "talking" range of 30 miles or less. The area of this coverage area is πr^2 or 2,826 square miles.

b) On the other end of terrestial system scale is the small fully developed cellular cell having a radius of 1 mile. The area of this system is 3.14 square miles.

Since care has to be taken in allocating frequencies between adjacent systems, a given amount of spectrum will be divided into a number of smaller groups or frequency re-use sets. For a terrestial system, a safe division is the creation of 7 sets or groups of frequencies.

If a conservative factor of 7 is used, a terrestial system will be able to re-use the same given amount of satellite "footprint" spectrum by the following amount :

- for large terrestial cells

$$\frac{150{,}000}{2826 \times 7} = 7.6 \text{ times more}$$

- for small terrestial cells

$$\frac{150{,}000}{3.14 \times 7} = 6{,}824 \text{ times more}$$

For large terrestial cell systems, the actual frequency re-use factor will be more on the order of 4; because propagation losses would provide sufficient isolation between identical frequencies. Consequently the real advantage of a terrestial system will be more of the order of :

$$\frac{150{,}000}{2826 \times 4} = 13.3 \text{ times}$$

DSRS

(17)

Electrical and Electronic Manufacturers Association of Canada

77 Metcalfe Street, Suite 809, Ottawa, Ontario K1P 5L6 (613) 237-6847

August 29, 1984

Director General
National Telecommunications Branch
Department of Communications
300 Slater Street
Ottawa, Ontario
K1A 0C8

Subject: Proposed Changes to the Canadian Table of Frequency Allocations and Proposed Spectrum Utilization Policy for the Fixed, Mobile, Radiolocation, Mobile Satellite and Amateur Services in the Band 890-960 MHz

Dear Sir:

EEMAC welcomes the opportunity of commenting on Gazette notice DGTP-006-84/TRS-015-84. The Land Mobile and Marine Technical Committee of EEMAC has a direct concern in this area of the spectrum.

Attached is our submission for your information and consideration.

Yours sincerely,

/for AL GOETZ

Albert F. Goetz
Technical Liaison Officer

EEMAC Comments To:-

DGTP-006-84/TRS-015-84

DEPARTMENT OF COMMUNICATIONS

Proposed Changes to the Canadian Table of Frequency Allocations
and
Proposed Spectrum Utilization Policy
For the Fixed, Mobile, Radiolocation,
Mobile Satellite and Amateur Services
in the Band 890-960 MHz

EEMAC is pleased to provide our comment on the above notice since the use of our limited spectrum is of vital concern to our industry.

We support and applaud the Department for its "forward thinking" and planning for the future implementation of the 890-960 MHz band. EEMAC does, however, recommend that the final allocation plan for this band be determined and implemented in concert with the FCC because of the need for co-ordinated activity along the border. This is particularly important where "internationally compatible mobile radio services" such as personal radio, air/ground public correspondence, MSAT, etc. are concerned.

EEMAC also recommends that, should these "internationally compatible services" not materialize, their frequency band reservations should revert back to their original Fixed and/or General Mobile status. EEMAC also urges that these services if implemented, by their nature, must be fully compatible between Canada and the U.S. Furthermore it would be undesireable for Canada to attempt to implement these international services on a unilaterial basis in Canada alone.

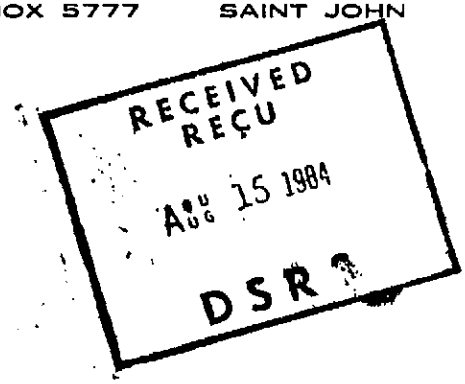
With regard to the proposed 6 MHz frequency reservation in this band for a mobile satellite system, EEMAC recommends that the mobile satellite service not be located in this limited and terrestrially desirable band. EEMAC believes that there is a more optimum location for a satellite based system in the 1500 MHz region which offers the potential of much more spectrum and many more other benefits. Our reasoning for this is included in EEMAC's response to Gazette Notice DGTP-003-84/DGTR-014-84. "Spectrum Reallocation Relating to the Mobile Satellite Service".

With regard to licencing of very low capacity systems in the 890-960 MHz band, EEMAC recommends that the licencing policy and procedures previously used for similar systems at the lower frequency bands be followed. As we understand it, RSP113 was developed to ensure that there was no unnecessary duplication of public carrier services. As a result RSP113 gives the Department the "right to disclose to, and consult on, the proposed system with other parties of interest who may be affected, either technically or economically by the proposals".

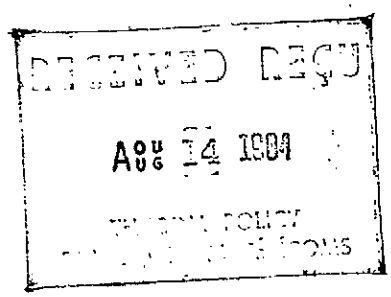
As indicated in the subject Gazette Notice "public interest and need" also requires to be demonstrated. Although there may be justification for these procedures and requirements for large high capacity systems, EEMAC questions whether these same requirements should be imposed on the small, very low capacity systems applicant, particularly when they do not present a threat to the viability of the established public carrier systems.

J. D. IRVING, LIMITED

P. O. BOX 5777 SAINT JOHN NEW BRUNSWICK CANADA E2L 4M3



August 9, 1984



Director General
Telecommunications Policy Board
Department of Communications
300 Slater Street
Ottawa, Ontario
K1A 0C8

Dear Sir:

Re: Radio Act, Canada Gazette, Part 1
Dated the 4th of May, 1984 &
the 25th of May, 1984. Notice
Refs. # DGTP-003-84/DGTR-014-84
DGTP-006-84/TRS-015-84

With reference to the invitation contained in the above documents for written submission from all interested parties with regard to the proposed spectrum reallocation for mobile satellite service, we as a potential user of the proposed system would offer the following comments.

1. Overall Considerations.

The overall operational requirement of the Irving Group of Companies is very diversified with operations in the Forest Products Industry, land based transportation, ocean transportation, oil refining and distribution, public transportation and activities involving general industry. We support the proposed introduction of the MSAT system in the areas of 2-way radio communication, data transmission, data acquisition and control, and remote area paging, especially with regard to the situation that a great deal of our operational requirements are extending into remote areas outside the range of existing radio communication systems.

2. Frequency Spectrum

We have no particular preference for the frequency bands indicated in the subject referenced documents, our primary consideration is that the quality, reliability and coverage offered will be of a high standard and cost effective in the frequency bands that will be available, and that the spectrum chosen will have sufficient spread to cover future growth potential.

Yours truly,

A. K. Bevan
Group General Manager
J. D. Irving Group of Companies

AKB/llw

J. E. TRANSPORTS
LISTOWEL TRANSPORT LINES LIMITED

P.O. Box 3160
CAMBRIDGE, ONTARIO
N3H 4S6

July 23, 1984.

Director General,
Telecommunications Policy Branch,
Department of Communications,
300 Slater Street,
OTTAWA, Ontario.
K1A 0C8.

Dear Sir:

Re: DGTP-003-84/DGTR-014-84

We are more interested than ever about MSAT as we progress further with our computer applications.

There now appears to be more things that can be done with radio links and computer than ever. With satelite linkage we can monitor many functions of the truck to save money and time and at the same time give the shipping public a better service.

Since radio frequencies are not a normal part of our business we are not really in a position to comment on what the best radio band would be for the MSAT application, but there is some concern with your comment about mobile service being dropped down to a secondary class in the 821-825 and 856-870 MHz range.

Again we wish to mention that we are looking forward to the experiments when the satelite is launched and will give you our full support on the project, also as a director of the Ontario Trucking Association I can assure you that a large number of other trucking firms have a great interest in this project.

Yours truly,

J. E. TRANSPORT LIMITED.

D. E. Bennett,
President.

DEB:sk

"MILLMAN'S"

COMMUNICATION SERVICES (1964) LTD.

SHOP: 11427 160th STREET
EDMONTON, ALBERTA
T5M 3T7

MAILING ADDRESS:
P.O. BOX 1634
EDMONTON, ALBERTA T5J 2N9

SHOP PHONE: 454-4951
451-3127

6980-14-7

August 10, 1984

Director General
Telecommunications Policy Branch
Department of Communications
300 Slater Street
Ottawa, Ontario
K1A 0C8

Attention: Mr F M Draper

Dear Sir:

Receipt is acknowledged of your letter of July 6, 1984 enclosing Notices DGTP-003-84/DGTR-014-84 and DGTP-006-84/TRS-015/84 which were recently published in the Canada Gazette.

We are pleased to note that frequency allocations are now proposed in the 806-896 MHz and the 1500 MHz bands. The proposed allocations of spectrum for mobile-satellite , cellular mobile radio systems etc., will greatly facilitate future planning for the possible use of these services.

Yours very truly,

C J Gawlicki
President.

MOBILE DATA INTERNATIONAL INC.

August 16, 1984

Director General
Telecommunications Policy Branch
Department ofCommunications
300 Slater Street
Ottawa, Ontario K1A 0C8

Dear Sir:

Re: DSTP-003-84/DSTR-014-84

MDI Mobile Data International Inc. is pleased to submit comment on the above-mentioned notices relating to mobile satellite services.

MDI supports the concept of a mobile satellite service (MSAT) both in the 800 and 1600 MHz bands. MSAT can provide necessary voice and data communications service in rural areas, which can be both cost-effective for the customer and profitable for the supplier. MSAT would fulfill a real need for a diversity of high quality communication services in rural areas, particularly in the far North.

An 800 MHz MSAT service could possibly be integrated with terrestrial cellular radio systems to provide country-wide coverage. Thus the range limitations of the terrestrial systems which are confined to the major metropolitan areas will be eliminated. Dual mode 800 MHz cellular radio mobile units could be developed to work on either terrestrial or satellite systems.

A 1600 MHz MSAT service would offer more communication capacity than the 800 MHz system because of the greater bandwidth available. Compatibility with existing terrestrial systems and competition for spectrum with existing terrestrial systems are not a significant issue here.

While voice communication services, particularly rural telephone service, will probably dominate the satellite capacity, MDI expects that data will play an increasingly large role

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10991 SHELLBRIDGE WAY, RICHMOND, BRITISH COLUMBIA, CANADA V6X 3C6/TELEPHONE (604) 278-3556/TELEX 04-355865

in the years to come. The mobile radio services are turning more towards using data rather than voice because of the operational, economic and spectrum efficiency advantages. The operational advantages of mobile data are speed, accuracy, privacy, message storage and direct data base access capabilities. The spectrum efficiency advantages arise because a single channel can support typically ten times as many data terminals as voice terminals. The economic advantages are a natural consequence of the operational advantages and are particularly significant for commercial dispatch services (couriers, taxis, etc.).

The market demand for mobile satellite service, particularly data service, is real and growing. MDI's largest customer, Federal Express Corporation, U.S.A., has indicated a strong interest in an MSAT range extension of their existing terrestrial digital dispatch system. Discussions on how to best accomplish this are underway.

MDI would encourage cooperative and coordinated use of MSAT spectrum with mobile satellite services in the U.S.A. and other North American countries. MDI has been in contact with the U.S. MSAT organizations (Skylab, Mobilsat, Geostar) and supports their efforts to obtain spectrum in the U.S.

In summary, the allocation of 800 and/or 1600 MHz spectrum to a land mobile satellite service would serve the public interest, convenience or necessity. The potential size of the market demand for mobile satellite services fully justifies the allocation of spectrum to this service.

Yours truly,

MDI Mobile Data International Inc.

Firoz Rasul
Vice President, Marketing

FR/al

DSRS

Mobile Satellite Corporation
MOBILSAT™
900 East Eighth Avenue
Suite 300
King of Prussia, PA 19406
(215) 265-8118

August 13, 1984

V. Hill
Director General
Telecommunications Policy Branch
Department of Communications
300 Slater Street
Ottawa, Ontario KPA OC8

Re: Notice No. DGTP-003-84/TRS-014-84
The Canada Gazette Part 1
May 19, 1984

Dear Mr. Hill:

Mobile Satellite Corporation is writing to express its support for the proposed allocation of L band frequencies (1545-1559 MHz and 1646.5-1660.5 MHz) for Mobile-Satellite use. As a United States company, Mobile Satellite Corporation has been actively pursuing the development of mobile satellite service on the U.S. side of our common border. We are convinced that mobile satellite service is an extremely attractive technology for providing mobile radio and other communications services to remote areas. However, for the new service to meet the existing and expected demand and provide sufficient revenues at reasonable rates to justify its development, there must be a sufficient allocation of frequencies. It is for this reasons that we have always supported the use of both UHF and L band frequencies for MSS.

The proposed allocation specified in Notice No. DGTP-003-84/TRS-014-84 is important to the implementation of Mobile Satellite Service ("MSS") for the countries of North America. It is clearly evident that there is a substantial need for mobile communication services that can be provided only by satellite. Mobile Satellite Corporation has determined that at least 20 MHz of bandwidth in mobile bands and corresponding allocations in a fixed services satellite band are needed for the United States. Additional spectrum is needed for Canada and other countries adjacent to the United States. The minimum requirements of a first generation commercial system can be met within that limited bandwidth by the use of spectrum efficient modulation techniques. A lesser allocation would jeopardize commercial viability and be inadequate for the identified needs.

In addition to the MOBILE-SATELLITE allocation in the 806-896 MHz band there is an immediate need in the United States to change the allocation in the 1500 MHz band to allow for a MOBILE-SATELLITE operation as proposed by Canada. Mobile Satellite Corporation has proposed compatible, cooperative national systems for Canada and the United States. Operation will be in the 806-890 MHz and the 1500 MHz bands. Adequate spectrum is available only if the reallocation proposed by Canada is adopted by the affected countries.

The introduction of mobile satellite services will contribute to the quality of life for many people in non-urban areas of Canada and the United States. While terrestrial mobile telephone, such as cellular, will benefit the cities, only a satellite mobile telephone can serve the thinly populated areas and fulfill national goals of universal service. The Mobile Satellite Corporation system design, using spectrum efficient modulation techniques, will bring the universal service to non-urban areas of the U.S. at user charges that are about the same as the cellular charges in the cities. In addition, the satellites can relay the FM signals of the terrestrial cellular systems, so that subscribers to the urban cellular service can, with modest changes to their cellular radios, place and receive calls through the satellites when they roam outside the terrestrial cellular service areas.

Because mobile satellites are distance insensitive, an MSS system can serve persons who live so far from telephone exchanges that it is too costly to provide them with wireline service. An affordable satellite mobile radio at a remote residence can interconnect the residence with a telephone exchange and the public switched telephone network.

The aeronautical community now holds these bands but is not using them. We recognize that the potential needs of aviation must be protected in the reallocation. Mobile Satellite Corporation has submitted a proposal to the U.S. Federal Aviation Administration that would accomplish this result. This proposed system can easily accommodate and be easily extended to cover North America and the oceanic environs. The system, based on proven techniques, would provide position surveillance and communications adequate for enroute traffic control of all aircraft in flight over the United States. The bandwidth required is proportional to the number of aircraft in flight. Fifty aircraft are tracked in each 10 kHz increment of bandwidth so that twenty thousand aircraft can be identified and located accurately every four seconds within 4 MHz of bandwidth. Voice and data communications complete the functions needed for air traffic control. As twenty thousand is much larger than the number of aircraft that are ever likely to need the satellite services, it is clear the the DOC is correct when it states that "...aeronautical mobile-satellite users do not appear to have large requirements."

The identified aeronautical requirements are so small that there is virtually no prospect of a dedicated aeronautical satellite. The history of the AEROSAT Program teaches that satellites will be accepted for aeronautical use only when they serve clearly identified needs in a cost effective way. The Mobile Satellite Corporation proposal opens the way to develop, test and implement an aeronautical mobile-satellite service under very favorable economic terms without requiring a dedicated satellite. Thus, the public interest is well served by this proposal since ATC and MSS are both advanced.

To protect the aeronautical interest we have suggested a primary allocation in the U.S. of 4 MHz in the 1545-1549 MHz band and 4 MHz in the 1646.5-1660.5 MHz band for AERONAUTICAL MOBILE-SATELLITE with MSS on a secondary basis; this allows use of the 4 MHz allocation by MSS during the long development phase of the ATC service. The remainder of the band, i.e. 10 MHz, is proposed to be reallocated to MOBILE-SATELLITE on a primary basis.

The interests of all who need the mobile satellite services, including aeronautical, are best served by the reallocation of the 1500/1600 MHz band to SATELLITE-MOBILE as Canada and the Mobile Satellite Corporation have proposed. The Canadian initiative is very important, and we hope that cognizant agencies in both countries will give it due consideration.

Very truly yours,

Roy E. Anderson

Roy E. Anderson
Vice President

scotcomm

2300, boul. Laurentien
Saint-Laurent, Qué. Can. H4R 1K3

Tél: (514)331-3311
Télex: 058-24824

August 15th, 1984.

Director General,
Telecommunications Policy Branch,
Department of Communications,
300 Slater Street,
Ottawa, Ontario.
K1A 0C8

Attention: Mr. V. Hill

Re: DGTP-003-84/DG-TR-014-84

Dear Mr. Hill,

Scotcomm is pleased to have the opportunity to comment on the "Spectrum Reallocation Relating to the Mobile Satellite Service" as is proposed in the 800 MHz frequency range.

As you are aware, Scotcomm has been actively involved in the MSAT project from its inception. Our more than twenty-five years experience as an RCC and our understanding of the needs of the market, including many thousands of radio paging and mobile radio repeater subscribers, allows us to conclude that there is a significant need for the services proposed through the MSAT project, not only two-way voice but also data and nation wide radio paging service on a direct broadcast and enhanced repeater basis.

Canada has traditionally led the World in high technology satellite communication projects. Not only does MSAT continue this tradition but allows for the roots of re-establishing Canadian manufacturing of radio communication products.

By use of the 800 MHz spectrum we gain the economies of scale of the larger manufacturing productions of cellular radio, trunked mobile radio units and radio pagers. These products will provide the Canadian public with lower cost remote rural and urban communication facilities. The same unit may be more conveniently used through the satellite as well as terrestial trunked land repeaters.

MSAT is ideally suited for the sparsely populated areas of Canada. It will help develop our national and human resources and improve safety services.

Current and future needs for additional spectrum are clearly indicated by the demand for these services especially since no other reliable services exist in many instances. Unreliable HF SSB communication facilities may better be accommodated through the MSAT spectrum.

In our opinion, allocation of additional spectrum for this project in the 1500 MHz cycle band is well warranted and we are fully in favour of the proposal as outlined by the Department.

It is with great optimisim that we favourably endorse this project and spectrum allocation.

Thank you for this new opportunity.

Yours truly,

SCOTCOMM RADIO INC.

Murray Epstein,
President.

ME/hm

SED SYSTEMS INC.

August 15, 1984

Director General
Telecommunications Policy Branch
Department of Communications
300 Slater Street
OTTAWA, Ontario
K1A 0C8

Dear Sir:

Reference : Canada Gazette, Part 1
Notice No. DGTP-003-84/DGTR-014-84

SED Systems Inc. welcomes and supports the proposed amendments to the Canadian Table of Frequency Allocations by adding on a primary basis the mobile satellite service in the frequency bands 821-825, 845-851, and 866-870 MHz.

Such a move is necessary at this time to ensure the unhindered development of mobile satellite services in Canada. SED supports the MSAT program in that a nationwide mobile satellite system is economically feasible, more practical for suburban and rural areas than cellular radio systems, and would better unite Canada as a nation.

At this time, SED has no comment on a change in allocation in the 1500 MHz band to allow for mobile satellite operation, other than that we support anything that would make MSAT a reality.

SED would like to reaffirm its corporate position as fully supporting the MSAT program. If we can, in any way, further this objective by participating in studies or providing industry support, you may contact myself or Kent McKerlie (306-664-1843) to arrange for SED involvement.

Yours truly,

Alex Curran
President and CEO

jh

P.O. BOX 1464 SASKATOON SASKATCHEWAN CANADA S7K 3P7 ● TELEX: 074-2495 ● TWX: 610-731-1476 ● PHONE (306) 244-0976

DSR5

Spar
Aerospace
Limited

21025 Trans-Canada Highway, Ste-Anne-de-Bellevue, Quebec, Canada H9X 3R2

August 17, 1984

Government of Canada
Department of Communications
300 Slater Street
Ottawa, Ontario K1A 0C8

Attention: Director General
Telecommunications Policy Branch

Gentlemen:

Spar is pleased to respond to the request made by Mr. F. M. Draper of the M-SAT Program Planning & Work Groups, for comments on proposed changes to the frequency allocations in the bands 806 to 890 MHz, 890 to 960 MHz and 1544 to 1660 MHz. The proposed changes are described in two Canada Gazette notices: DGTP-003-84/DGTR-014-84 and DGTP-006-84-TRS-015-84.

The following comments are responsive to both of these notices; however, comments on the latter notice apply only to the use of the band 890 - 896 MHz for the Mobile Satellite Service.

Spar believes that a unique and valuable service can be provided to remote and rural areas of Canada by a Mobile Satellite System. It concurs with the choice of the 800 MHz band for the introduction of this service, recognizing both the keen competition for scarce spectrum and the potential advantages of commonality, if not compatibility, with terrestrial mobile services. In addition, the Canadian Government, through the Department of Communications and Spar, have invested substantial financial and skilled manpower resources in the development of technology at this frequency band. This constitutes a significant competitive advantage for Spar in securing contracts for first generation and subsequent mobile satellite systems for both North American and worldwide applications.

Comments on the choice of specific frequency assignments within the 800 MHz band are based on factors affecting the cost of the space segment. In general, the use of additional spectrum to expand the initial service is more cost effective than the alternative of frequency reuse which requires complex spacecraft with very large antennas.

Telephone: (514) 457-2150 Telex: 05-822792

There is considerable advantage in having 10 MHz of bandwidth compared to the 4 MHz planned for the present M-SAT design. This is particularly true of later generation spacecraft when frequency reuse is required to increase the channel capacity. With wider bandwidth, smaller antennas can be used, producing larger beams, which reduces the size of the whole spacecraft. It would be preferable, from the spacecraft design point of view, to have a contiguous 10 MHz band rather than the split band as proposed. This relates to the effects of passive intermodulation (PIM) which become more pronounced as the total transmit band occupied approaches the transmit to receive band separation.

We note that there seems to be some inconsistency in the table for the 800 MHz band compared to the text. The table (footnote 700) describes the 845-851 MHz as allocated to the mobile satellite service on a primary basis whereas the text states that this band would remain with the mobile service on a primary basis. We would appreciate DOC's clarification of this point.

In either case it is not clear how the companion downlink band of 890 - 896 MHz is to be shared between the mobile and mobile satellite services

The change in the allocation of the 1500 MHz band to remove the restriction to Aeronautical mobile, thus opening the way for expansion of the Land Mobile Satellite Services into this band, appears to be an effective consolidation of the allocations. Notwithstanding the technical arguments for and against, the introduction of the Mobile Satellite Service in this band would negate much of the advantage gained by Canada and Spar from the hardware and system developments on the M-SAT program.

We trust that the above comment will be of use in obtaining the necessary spectrum reallocation for the M-SAT program.

Yours very truly,

SPAR AEROSPACE LIMITED

G. A. Branchflower
Director, Programs
Satellite and Aerospace Systems Division

Forum

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Ottawa, Ontario
K1P 6H5

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TWX: 610-562-1911
Envoy: TC. EXEC

Telecom Canada

Forum

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1984 08 13

TC.16.07.06.01

Mr. V. Hill
Director General
Telecommunications Policy Branch
Department of Communications
300 Slater Street
Ottawa, Ontario
K1A 0C8

Dear Mr. Hill:

Re: Telecom Canada Forum's response to the DOC Notice on Spectrum Reallocation Relating to the Mobile Satellite Service

On behalf of Telecom Canada Forum, enclosed you will find ten copies of our response to the Department of Communications Gazette Notice DGTP-003-84/TRS-014-84 dated 19 May 1984.

Should you have any questions or wish additional information please call Ray Wilson at (613)-560-3482.

Yours truly,

D.R. Nickerson
Chairman - Technical Committee

Attachment

TELECOM CANADA FORUM

SUBMISSION TO

THE FEDERAL DEPARTMENT OF COMMUNICATIONS

IN RESPONSE TO

CANADA GAZETTE NOTICE PART I

DGTP-003-84/TRS-014-84

MAY 19, 1984

ON SPECTRUM REALLOCATION

RELATING TO THE MOBILE SATELLITE SERVICE

OTTAWA, ONTARIO

AUGUST 13, 1984

Introduction

This submission, in response to the Canada Gazette Notice Part I DGTP-003-84/TRS-014-84 on Spectrum Allocation Relating to the Mobile Satellite Service, is made by the Telecom Canada Forum (hereinafter referred to as "The Forum", or "member companies"), on behalf of its members which are listed below:

Alberta Government Telephones
B.C. Tel
Bell Canada
Canadian Independent Telephone Association
edmonton telephones
Island Tel, PEI
Manitoba Telephone System
Maritime Tel & Tel
NBTel
Newfoundland Telephone
Northern Telephone Limited
Ontario Northland Telecommunications
Québec-Téléphone
Saskatchewan Telecommunications
Télébec Limitée
Telesat Canada

The Forum was formed in June 1981. Among its main purposes are those of providing a forum for members to discuss and share opinions on general policy issues, formulating positions on policy issues, providing leadership in the development and promulgation of technical standards, and acting as spokesman for member companies collectively.

This paper addresses the position of the Forum members on the subject of spectrum allocations for the proposed mobile satellite service (MSAT). The Forum telephone companies

have been working for over two years with the Department of Communications in the Phase B MSAT Program. In particular, Telesat, in its role as the potential owner and operator of the MSAT satellite system, has been even more active in all parts of the MSAT investigations. It is from this perspective, and from the position of the telephone companies as providers of mobile communications services, that we make the following comments.

Cellular Requirements

A possible alternate use for the frequency bands 821-825 MHz, 845-851 MHz and 866-870 MHz, is to relieve future overcrowding for cellular mobile telephone services. However, the Forum telephone companies, in examining their long term forecasts for cellular, cannot at this time foresee any situations where the current frequency allocation could be exhausted. (It should be noted that these views do not necessarily represent the position of any possible Bell Canada Enterprises cellular mobile subsidiary).

The Forum notes that only the 821-825 MHz and 866-870 MHz bands are being proposed for primary allocation to MSAT at this time. The proposal to retain the 845-851 MHz band as a reserve is a prudent idea, given the uncertain nature of the MSAT market. The proposed 8 MHz allocation to MSAT is believed to be sufficient to establish the size of the MSAT market. Allocation of the 845-851 MHz band can be resolved at some future time when the needs of both MSAT and cellular are more obvious.

U.S. Compatibility

The Forum believes that it is essential to maintain full compatibility between Canadian and U.S. spectrum allocations in the 806-890 MHz band.

Should the FCC not make provisions similar to those being proposed by DOC for allocation of the 821-825 MHz, 845-851 MHz and 866-870 MHz bands, it should then be necessary for DOC to review the situation.

1500 MHz Allocation

With respect to the proposal to allow operation of land and maritime mobile satellite services in addition to aeronautical mobile satellite services in the 1500 MHz band, the Forum can see no reason why this should not be permitted.

Conclusion

The allocation of spectrum is a necessary step towards the realization of the proposed MSAT system. The members of the Telecom Canada Forum look forward to ongoing participation with the Department of Communications in the MSAT Program.

TELECOM CANADA FORUM
OTTAWA, CANADA
AUGUST 13, 1984

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14

1984 08 31

TC 16.07.06.01

Mr. V. Hill
Director General
Telecommunications Policy Branch
Department of Communications
300 Slater Street
Ottawa, Ontario K1A 0C8

Dear Mr. Hill:

Re: Notice No. DGTP-006-84/TRS-015-84* - Proposed changes to the Canadian Table of Frequency Allocations and Proposed Spectrum Utilization Policy for the Fixed, Mobile, Radiolocation, Mobile Satellite and Amateur Services in the Band 890-960 MHz.

On behalf of Telecom Canada Forum, enclosed you will find ten copies of our response to the Department of Communications Gazette Notice No. DGTP-006-84/TRS-015-84 dated June 2, 1984.

Should you have any questions or wish additional information please call Ray Wilson at (613) 560-3482.

Yours truly,

D.R. Nickerson
Chairman - Technical Committee

Attachment

TELECOM CANADA FORUM

SUBMISSION TO

THE FEDERAL DEPARTMENT OF COMMUNICATIONS

IN RESPONSE TO

CANADA GAZETTE NOTICE PART I

DGTP-006-84/TRS-015-84

2 JUNE 1984

ON

Proposed Changes to the Canadian Table of Frequency Allocations and Proposed Spectrum Utilization Policy For the Fixed, Mobile, Radiolocation, Mobile Satellite and Amateur Services in the Band 890-960 MHz

OTTAWA, ONTARIO

AUGUST 31, 1984

Introduction

This submission, in response to the Canada Gazette Notice DGTP-006-84/TRS-015-84 on the proposed spectrum utilization policy for the fixed, mobile, radiolocation, mobile satellite and amateur services in the band 890-960 MHZ is made by the Telecom Canada Forum (hereinafter referred to as "The Forum", or "Member Companies"), on behalf of its members which are listed below:

Alberta Government Telephones
B.C. Tel
Bell Canada
Canadian Independent Telephone Association
edmonton telephones
Island Tel, PEI
Manitoba Telephone System
Maritime Tel & Tel
NBTel
Newfoundland Telephone
Northern Telephone Limited
Ontario Northland Telecommunications
Québec-Téléphone
Saskatchewan Telecommunications
Télébec Limitée
Telesat Canada

The Forum was formed in 1981 06. Among its main purposes are those of providing a forum for members to discuss and share opinions on general policy issues, formulating positions on policy issues, providing leadership in the development and promulgation of technical standards and acting as spokesman for member companies collectively.

This paper addresses the position of the Forum members on the subject of the proposed spectrum utilization policy in the 890-960 MHz band. The Forum members have previously been working with the Department of Communications relating to the new services proposed for the 890-960 MHz band. It is from this perspective and as

providers of fixed and mobile communications services that we offer the following comments:

The Forum responded to the March 1983 Gazette Notices dealing with the purposed introduction of personal radio service (PRS) and air/ground public correspondence service. These responses expressed concerns that these proposals would result in a significant financial penalty to several member companies due to the relocation of a number of existing fixed systems in the 890-960 MHz band. The Gazette Notice DGTP-006-84/TRS-015-84 will now affect all existing low capacity (LC) fixed systems in the 890-960 MHz band. The relocation of these fixed systems totalling approximately 300 2-way/RF channels for member companies alone, would cause an even greater financial penalty to our members in comparison with the cost ($6.2M) related to the Department's earlier proposals of March 1983.

During the Department's 1-10 GHz Policy Review, the need for a significantly increased degree of inter-service sharing of specific bands in the entire spectrum was noted. Accordingly, one of the immediate ramifications stated was:

"The need for planning on the part of users and spectrum regulators in terms of coordination based on long-term projections".

The resulting 1-10 GHz Final Policy had accommodated virtually all new usages with a minimum impact on current services requiring either elimination or accommodation in alternative bands.

We believe the Department's objective for the increased sharing of bands by services and system capacities should be also applicable to the 890-960 MHz band. Therefore, with appropriate coordination and licensing policy, the existing low capacity fixed systems should be retained in a majority of sub-bands either on a primary basis or as a minimum on a grandfathered basis with full protection as standard conforming systems.

The retention of existing fixed systems for the foreseeable future would be justified by methods, such as, coordination with other services using geographical separation or when service requirements for new services arise at some distant future. These are substantiated as follows:

A. In the 890-896 MHz sub-band, the mobile-satellite service is a long-term requirement while the radiolocation has operation restriction during peacetime. Consequently, existing LC fixed systems should be able to operate in the interim period.

B. In the 896-898 MHz and 941-943 MHz Sub-bands, the proposed operation of air/ground service would present mutual interference problems with existing LC fixed systems. For these sub-bands, the Department is requested to give as much lead time, at least until April 1988, for the relocation of existing LC fixed systems.

C. In the 898-902 MHz and 937-941 MHz sub-bands, the proposed operation of PRS would mutually interfere with existing LC fixed systems. The implementation of PRS in the U.S. is somewhat uncertain at this time.

   If it is implemented in the U.S. we urge the Department to initially restrict its operation to major metropolitan areas in Canada. Further, the condition of a minimum 2-year notification for any system change and no system change required before 5 years have elasped from the non-conforming date, as stated in the DOC SP-GEN document, should apply to existing low capacity fixed systems.

D. In the 902-928 MHz sub-band where the Government of Canada shipborne radiolocation service is to be permitted in certain coastal regions, it is understood that such an operation will be on pre-coordinated channels with interference protection to existing fixed systems in accordance with SRSP-310. Further, new fixed systems, such as Multipoint Communications Systems (MCS), should be coordinated with existing LC fixed systems.

Consequently, existing LC fixed systems should continue to be permitted to operate in the 902-928 MHz sub-band.

E. In the 929-932 MHz sub-band to be shared with future mobile paging services, we believe that the need for such internationally compatible paging systems would arise along border areas and in major metropolitan areas of Canada, at least initially. Consequently, with appropriate coordination the operation of existing fixed systems should not be affected. However, should the expansion of such paging systems affect any fixed system, then the general arrangements for non-standard systems, including the modification or replacement of existing non-standard systems given in SP-GEN should apply in lieu of the proposed 2-year protection period.

F. For the 932-937 MHz and 943-947 MHz sub-bands to be designated for mobile reserve, the requirements for new mobile services will occur in the longer term. Therefore, existing LC fixed systems will not be affected until such new services are introduced.

G. For the 947-956 MHz and 956-960 MHz sub-band proposed for very low capacity (VLC) and studio transmitter link (STL) fixed systems, it would be possible to coordinate new fixed systems without affecting the existing LC fixed systems.

H. We request that the Department consider making 60 channel analogue and T1 digital systems standard in the 947-960, 902-915 and 916-928 MHz portions of the band.

Conclusion

The Telecom Canada Forum looks forward to ongoing participation with the Department of Communications on the subject of the utilization of the 890-960 MHz band.

Telecom Canada Forum
Ottawa, Ontario
August 31, 1984

Telesat

Telesat Canada
333 River Road
Ottawa, Ontario
K1L 8B9

(613) 746-5920

Telex 053-4184
TWX 562-8926

August 17, 1984

Mr. V. Hill
Director General
Telecommunications Policy Branch
Department of Communications
300 Slater Street
Ottawa, Ontario
K1A 0C8

Subject: Spectrum Reallocation Relating to the Mobile Satellite Service

Dear Mr. Hill,

Telesat Canada is providing the attached submission in response to Canada Gazette Notice DGTP-003-84/DGTR-014-84 concerning spectrum reallocation to mobile satellite services. We support the Department of Communications initiative in this matter and endorse the proposed spectrum allocations contained in the Gazette Notice.

Please contact me or Dave Sward of my staff at 746-5920 if you have any questions concerning our submission.

Sincerely yours,

M. Zuliani
Director, Satellite Services
Planning and Development

DS/nb
Attachment

cc: D. Sward

TELESAT CANADA

SUBMISSION TO

THE FEDERAL DEPARTMENT OF COMMUNICATIONS

IN RESPONSE TO

CANADA GAZETTE NOTICE PART I
DGTP-003-84/DGTR-014-84

SPECTRUM REALLOCATION RELATING TO THE MOBILE SATELLITE SERVICE

August 17, 1984

SPECTRUM REALLOCATION RELATING TO MOBILE SATELLITE SERVICE

The following submission is made by Telesat Canada in response to the Canada Gazette Notice Part I DGTP-003-84/ DGTR-014-84 issued by the Department of Communications. This Gazette Notice addresses spectrum reallocation relating to the Mobile Satellite Service.

Telesat Canada is in the process of completing an extensive evaluation of the commercial viability of MSAT services under contract to the Department of Communications. Our study results indicate that a mobile satellite service in Canada is commercially viable under certain terms and conditions. The availability of adequate spectrum to meet present and future needs is a key requirement in this regard.

As shown in Figure 1, the market demand for moderately priced mobile satellite services is estimated to be 55,000 to 70,000 users by the end of life of the first generation satellite system, i.e. 7 years. An allocation of 4 + 4 MHz would be sufficient to serve up to 35,000 users using a 2 beam spacecraft and assuming a 50/50 spectrum sharing arrangement with the United States. Although this capacity falls short of the market demand, it is sufficient for service introduction and early market build-up. On this basis Telesat supports the Department of Communications proposal to amend the Canadian Table of Frequency Allocations by adding on a primary basis the mobile satellite service in the 821-825 MHz and 866-870 MHz bands.

The demand for MSAT services is projected to increase to between 80,000 to 100,000 users by the year 2001. Possible future cost reducing technology developments could increase the demand for MSAT services to a level in excess of 150,000 users. This implies that second generation systems will have

to provide additional communications capacity. A larger four beam satellite system would be capable of accommodating in excess of 100,000 users. However, a 4 + 4 MHz allocation, again shared with the United States would limit the system capacity to 50,000 users. This falls short of the market demand and would significantly increase the risk of achieving a second generation commercial system. In addition, user groups such as law enforcement, transportation and resource industries would be limited to a certain level of utilization. MSAT must meet present requirements and provide growth capabilities in order to attract large user groups which represent a major portion of the MSAT market.

On the basis of the above arguements, Telesat supports the Department of Communications proposal to allocate on a primary basis an additional 6 MHz in the 845-851 MHz band. We also support the allocation of a matching 6 MHz in the 890-896 MHz band and will reflect this in our response to Canada Gazette Notice DGTP-006-84/TRS-015-84 which addresses this matter.

Telesat believes that a mobile satellite service must be initiated in the 800 MHz band in order to achieve the greatest amount of commonality with terrestrial cellular systems. This would provide for the lowest possible terminal cost for MSAT users by taking advantage of the large scale manufacturing of 800 MHz terminal equipment and associated componentry for terrestrial cellular systems. In addition, future operational compatability between terrestrial and MSAT services is made possible by providing both services in the 800 MHz band. The extent to which the integration of land based and satellite systems occurs will depend on terrestrial systems adopting narrower voice channels such as the 5 kHz linear predictive coding or amplitude companded single side band technologies as proposed for MSAT services. Such an evolution would ensure that both satellite and terrestrial mobile systems utilize the available spectrum resource to a maximum efficiency.

As in the case of cell-splitting in cellular radio to increase capacity, the use of multiple beam satellites which allow for a greater degree of frequency re-use is a costly means of increasing mobile satellite capacity. We recognize that in a spectrum limited environment this may be the only option. However, two generations of mobile satellite's, i.e. 14 years use required to reach market maturity. During this period of market growth, the earning potential is substantially less than that which will be provided by future generations of more evenly utilized satellites. Therefore, it is critical to minimize the costs of the first generations of MSAT and the allocation of sufficient spectrum to meet the market requirements without requiring the use of large multi-beam satellites is the key to achieving this. Further, it must be recognized that spectrum allocated to mobile satellite services will be shared with the United States. Although a 50/50 arrangement is reasonable for early market development, the U.S. demand is likely to significantly exceed Canadian requirements in the long-term and this may result in pressures from the U.S. for more spectrum. On this basis adequate spectrum should be made available to meet the needs of the North American market in order to ensure that Canada will be in a position to negotiate sufficient spectrum to meet its own domestic needs.

Finally, Telesat supports the allocations in the 1500 MHz band as proposed by the Department of Communications for mobile satellite service. Operation in this band is suitable for future expansion of MSAT services, however, development of a special family of MSAT services will likely be required. These services could include specialized voice and data systems which are not dependent on operation in the 800 MHz band. Examples may include remote sensing, fixed telephony to remote areas, marine and aeronautical applications.

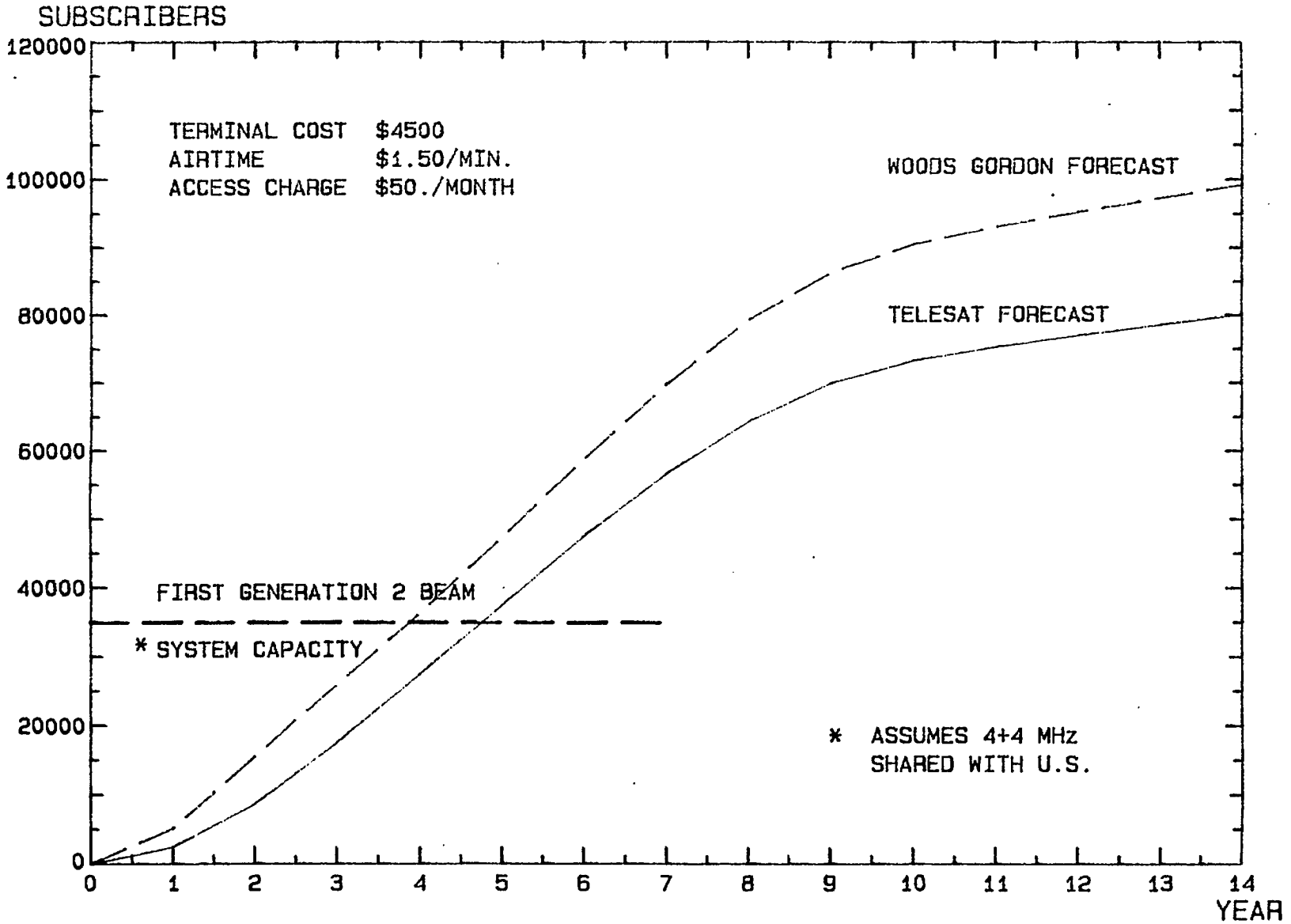
Telesat Canada supports the Department of Communications initiatives with regard to allocating sufficient spectrum to permit a commercial mobile satellite system to evolve in Canada. Further, we believe that these actions taken by the Government of Canada will demonstrate conviction and commitment to mobile satellite service concept to interested parties within Canada and the United States, and may enhance Canada's negotiating position with the FCC to co-ordinate the use of these bands.

NOTE: Figure 1 - MSAT Market Penetration (16/08/84). The information presented in Figure 1 was derived from the following Phase B MSAT reports;

1. Study to Determine the Future Market for Mobile Satellite (MSAT) Services in Canada and the Benefits Accruing to Users. (Contractor: Woods Gordon)

2. Commercial Viability Assessment of MSAT. (Contractor: Telesat Canada)

FIGURE 1



MSAT MARKET PENETRATION

(16-08-84)

Tele Sat

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Ottawa, Ontario
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Telex 053-4184
TWX 562-8926

13

August 31, 1984

Mr. V. Hill
Director General
Telecommunications Policy Branch
Department of Communications
300 Slater Street
Ottawa, Ontario
K1A 0C8

Subject: Spectrum Reallocation Relating to the Mobile Satellite Service

Dear Mr. Hill,

Telesat Canada is providing the attached submission in response to Canada Gazette Notice DGTP-006-84/TRS-015-84 concerning spectrum reallocation to mobile satellite services. We support the Department of Communications initiative in this matter and endorse the proposed spectrum allocations contained in the Gazette Notice.

Please contact me or Dave Sward of my staff at 746-5920 if you have any questions concerning our submission.

Sincerely yours,

M. Zuliani
for Director, Satellite Services
Planning and Development

MZ/nb
Attachment

cc: D. Sward

TELESAT CANADA

SUBMISSION TO

THE FEDERAL DEPARTMENT OF COMMUNICATIONS

IN RESPONSE TO

CANADA GAZETTE NOTICE PART I

DGTP-006-84/TRS-015-84

PROPOSED CHANGES TO THE CANADIAN TABLE OF FREQUENCY ALLOCATION AND PROPOSED SPECTRUM UTILIZATION POLICY FOR THE FIXED MOBILE, RADIOLOCATION, MOBILE SATELLITE AND AMATEUR SERVICES IN THE BAND 890-960 MHz

AUGUST 31, 1984

PROPOSED CHANGES TO THE CANADIAN TABLE OF FREQUENCY ALLOCATION AND PROPOSED SPECTRUM UTILIZATION POLICY FOR THE FIXED MOBILE, RADIOLOCATION, MOBILE SATELLITE AND AMATEUR SERVICES IN THE BAND 890-960 MHz

The following submission is made by Telesat Canada in response to the Canada Gazette Notice Part 1 DGTP-006-84/TRS-015-84 issued by the Department of Communications. This Gazette Notice addresses proposed changes to the Canadian Table of Frequency allocations and proposed spectrum utilization policy for the fixed, mobile, radiolocation, mobile satellite and amateur services in the 890-960 MHz band. Telesat Canada's response will concentrate on those issues related to the mobile satellite services.

Telesat Canada supports the Department of Communications initiative to foster the development of new satellite-based mobile communications service in Canada. We believe a national mobile satellite system (MSAT) will help equalize the availability of telecommunication services in the rural and, remote areas of Canada. Telesat is currently in the process of completing a detailed assessment of the commercial viability of MSAT services. The purpose of this assessment is to determine the potential of MSAT to be a self-sustaining commmercial venture in the long-term. The process has involved an in-depth analysis of the market and demand for MSAT services, technical feasibility, economic and institutional considerations. The results indicate that MSAT is commercially viable under certain terms and conditions. The availability of adequate spectrum to meet present and future needs is a necessary requirement in this regard.

As detailed in our response to Canada Gazette Notice DGTP-003-84/DGTR-014-84 concerning spectrum reallocation to mobile satellite service, we support the Department of communications proposal to amend the Canadian Table of Frequency Allocation by adding on a primary basis the mobile satellite service in the 821-825 MHz and 866-870 MHz bands. We demonstrated that a 4 + 4 MHz allocation shared with the United States would provide a 2-beam system capacity of 35,000 users which is sufficient for service introduction and early market build-up. However, this same allocation is clearly not enough for the market in the second generation. As shown in Fig. 1, the market demand for moderately priced mobile satellite service in the second generation is estimated to be between 80,000 to 100,000 users. A 4-beam system with the same 4 + 4 MHz allocation would limit the system capacity to serving 50,000 users. This significantly reduces the commercial viability of the second generation system. An attempt to accommodate more users through the use of a more costly multi-beam system would further increase the commercial risk. Therefore, in order to meet present requirements and provide growth capabilities for the total North American market, we support the Department of Communications proposal to allocate on a primary basis an additional 6 + 6 MHz in the 845-851 MHz and 890-896 MHz bands for mobile satellite services.

Band splitting the 845-851 MHz into 3 + 3 MHz to accommodate both the satellite uplink and downlink, is technically feasible. However, the additional filtering requirements on the spacecraft and mobile terminals render this a costly way of increasing system capacity. Further, such a means of utilization may yield poor spectrum efficiency due to the additional requirements for guard bands. On this basis, we support the Department of Communications proposal to allocate a separate 6 MHz band for satellite uplink and downlink purposes.

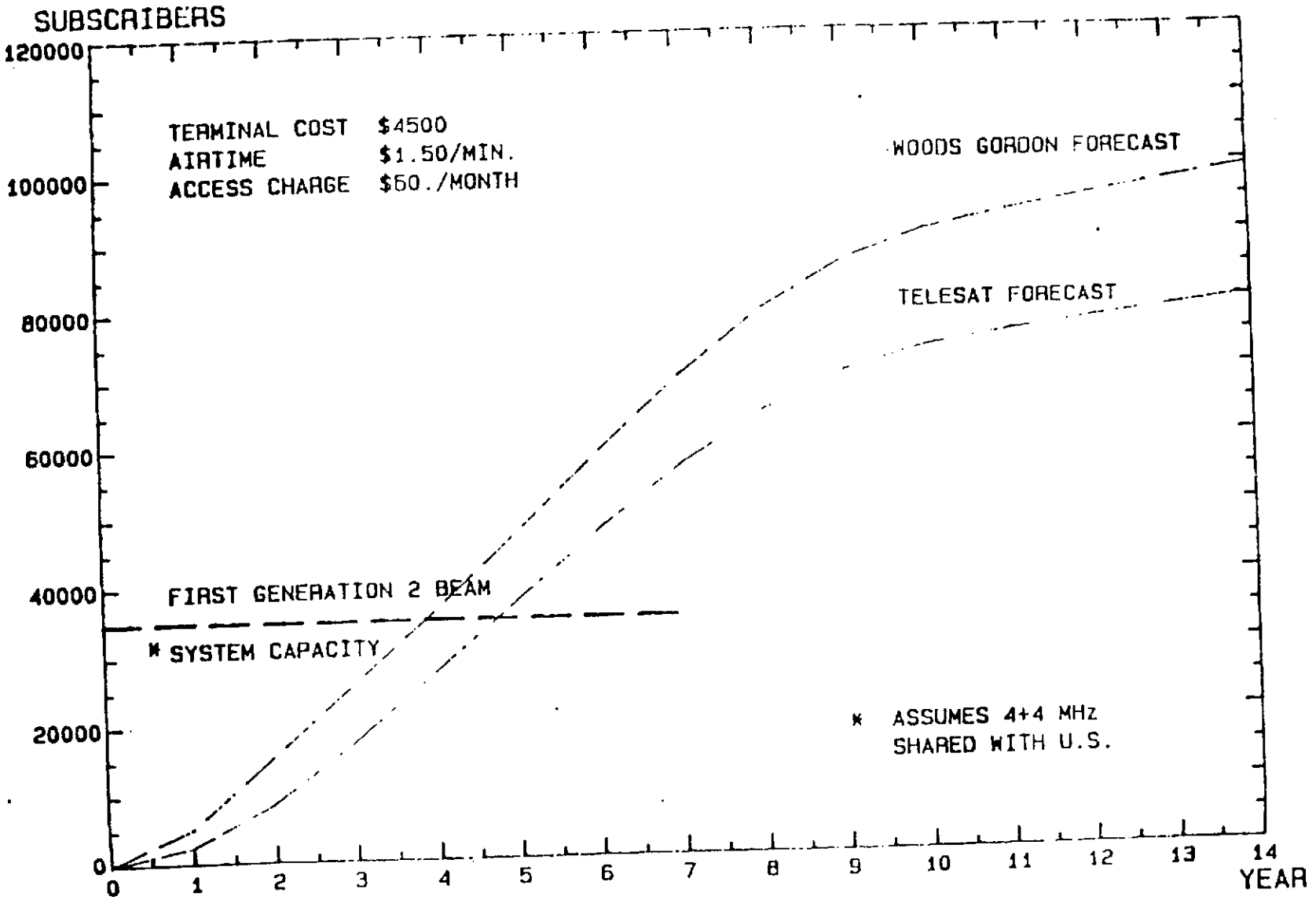
As indicated in our response to Canada Gazette Notice concerning spectrum reallocation to mobile satellite service in the 821-825 MHz and 866-870 MHz bands, Telesat Canada supports the Department of Communications initiatives with regard to allocating sufficient spectrum to permit a commercial mobile satellite system to evolve in Canada. Further, we believe that these actions taken by the Government of Canada will demonstrate conviction and commitment to mobile satellite service concept to interested parties within Canada and the United States, and may enhance Canada's negotiating position with the FCC to co-ordinate the use of these bands.

NOTE: Figure 1 - MSAT Market Penetration (16/08/84).
The information presented in Figure 1 was derived from the following Phase B MSAT reports:

1. Study to Determine the Future Market for Mobile Satellite (MSAT) Services in Canada and the Benefits Accruing to Users.
(Contractor: Woods Gordon)

2. Commercial Viability Assessment of MSAT.
(Contractor: Telesat Canada)

FIGURE 1



MSAT MARKET PENETRATION

(16-08-84)

THOMPSON
TRANSPORT
LIMITED

HEAD OFFICE
R.R. 3 ST. THOMAS - HIGHWAY 3 EAST
BOX 547 N5P 3V6

August 7, 1984

Director General
Telecommunications Policy Branch
Department of Communications
300 Slater Street
Ottawa, Ontario
K1A 0C8

RE: Submission on DETP - 003-84/ DETR - 014-84

Dear Sirs:

This Company is very interested in the establishment of a mobile-satellite service and the MSAT program.

Thompson Transport is a common carrier operating a less than truck load and truck load service between points in Southern Ontario and points in the United States. The company presently operates over 400 pieces of equipment and is heavily involved in the transportation of automotive parts to assembly plants.

The major contractual customers are Ford Motor Company and Chrysler Corporation.

As a major transportation supplier to these companies our firm is heavily committed to the "Just In Time" procedures that are being set out by the Automotive Companies.

The establishment of a system that allows tracking and direct control over large geographical areas is critical to the transportation industry as inventory levels go to absolute minimums. A true "Just In Time" service conducted 24 hours per day that is 100% reliable is just not possible without instant access to the driver and equipment.

The use of cellular mobile radios and dedicated radio frequency allocations to ensure 100% reliability is in our view critical to the success of these programs. Our customers have already indicated keen interest in these programs and have already looked at interfacing with the trucking industry computer systems to allow direct tracking capability by the Automotive Company. It is to us, interesting to note that the policy of the Automotive Industry with regard to transportation

service failures is to charge back the "down time" costs to the transportation company responsible.

These charges can amount to tens of thousands of dollars per incident. When one considers the effect of a transportation service failure on a large assembly plant that is carrying little or no parts inventory, one can appreciate the necessesity to have constant monitoring control of linehaul units. In our view, the allocation of frequency spectrums for mobile-satellite services should be done with accomodation to the following points:

Dedicated channels to each subscriber
Private use of a subscriber channel
100% reliability

Thank you for this opportunity to comment on these proposals.

Yours truly,

BILL THOMPSON TRANSPORT LIMITED

Gerald Thompson
Vice President

GT/la

TELEPHONE (403) 277-8538
TELEX 03-821273

West Can Electronic Services Ltd.

2840 - 19TH STREET N.E.
CALGARY, ALBERTA
T2E 6Y9

August 13, 1984

Director General
Telecommunications Policy Branch
Department of Communications
300 Slater Street
Ottawa, Ontario
K1A 0C8

Dear Sir:

RE: Canada Gazette Part I

DGTP-003-84/DGTR-014-84 - May 4, 1984
DGTP-006-84/ TRS -015-84 - May 24, 1984

As a possible future service provider of terrestrial equipment for mobile-satellite applications, we would like to offer the following comment relative to the above Canada Gazette Notices:

(a) We support the Department's proposal to allocate frequency spectrum in the bands 821-825 mhz and 866-870 mhz, for the primary use of mobile satellite communications.

(b) We further agree with the proposal to provide for possible future expansion of these services, with consideration of the bands 845-851 mhz, 890-896 mhz and above 1500 mhz, as appropriate choices.

From the proposed changes outlined in these Notices, it would appear that the development of other terrestrial services, such as Personal Radio, Trunked Repeaters and Cellular Radiotelephone Systems, can still be accommodated with careful spectrum utilization.

In our view, the MSAT concept should not be regarded as just another repeater "in space", but an advanced telecommunications facility with a capability and capacity not currently available, or economically cost-effective, via present terrestrial and satellite systems. As a unique Canadian development aimed at solving many of our country's geographical communications problems, the MSAT system would complement rather than compete with existing facilities.

For these reasons, we feel it is vital that MSAT be given priority in the allocation of interference-free frequency assignments.

Yours truly,
WEST CAN ELECTRONIC SERVICES LTD.

R. L. Craig
General Manager

RLC/caa

GOVERNMENTS

(ALPHABETICALLY)

B. GOVERNMENTS

Canadian Coast Guard	23 August 1984
Canadian Coast Guard	24 August 1984
Health and Welfare Canada	16 August 1984
Indian Affairs and Northern Development	25 July 1984
National Defence	29 May 1984
National Defence	14 August 1984
National Defence	16 August 1984
National Research Council	24 May 1984
Ontario Ministry of Transportation and Communications	18 July 1984
Radio Advisory Board of Canada	17 August 1984
Royal Canadian Mounted Police	18 July 1984
Transport Canada	14 August 1984

DSRS

Canadian Coast Guard / Garde côtière canadienne

Ottawa, Ontario
K1A 0N7

August 23, 1984

Your file / Votre référence
6980-14-7

Our File / Notre référence
M1602-1 (CGTP/M)

Mr. V. Hill,
Director General,
Telecommunications Policy Branch,
Department of Communications,
300 Slater Street,
Ottawa, Ontario
K1A 0C8

Dear Mr. Hill:

Subject: CANADA GAZETTE, PART I MAY 4, 1984
DGTP-003/DGTR-014-84
SPECTRUM REALLOCATION RELATING TO THE
MOBILE SATELLITE SERVICE

We wish to express our support for the new frequency assignments in the band 806-890 MHz as proposed in the subject notice. Having reviewed the various analyses pertaining to the optimum frequency bands for MSAT, we agree that the proposed frequency bands are the most suitable when compared to the other available choices.

Yours sincerely,

B.B. Borodchak,
Director General,
Telecommunications and Electronics.

Canada

Canadian Coast Guard | Garde côtière canadienne

10

Ottawa, Ontario
K1A 0N7

Your file Votre référence

August 24, 1984

Our File Notre référence
M8050-4 (CGTP/M)

Mr. V. Hill,
Director General,
Telecommunications Policy Branch,
Department of Communications,
Journal Tower North
300 Slater Street
Ottawa, Ontario
K1A 0C8

Dear Mr. Hill:

Subject: NOTICE NO. DGTP-006-84/TRS-015-84
PROPOSED CHANGES TO THE CANADIAN TABLE OF FREQUENCY ALLOCATIONS AND PROPOSED SPECTRUM UTILIZATION POLICY FOR THE FIXED, MOBILE, RADIOLOCATION, MOBILE SATELLITE AND AMATEUR SERVICES IN THE BAND 890-960 MHz

This is in response to the above captioned notice which was published in the June 2, 1984, edition of the Canada Gazette Part I.

The Canadian Coast Guard operates extensive fixed networks in this band on both the East and West Coasts as part of the Coast Guard Radio Station and Vessel Traffic Services systems, thus the proposals are of interest to us. We consider that should they become policy the effect will be to degrade or even jeopardize the essential safety service we provide.

Of greatest concern is the allocation of the 902-928 MHz band to radar operations within 150 km of the coast. We have 12 frequency assignments in this band. All would become non-standard and all would be subject to interference from DND radars because by the very nature of our function, all of our microwave systems are located close to the coast.

.../2

Canada

Also of concern to us, but to a lesser extent are the following:

- 16 of our frequency assignments in the whole band would become non-standard because they are part of low capacity systems.

- In the 890-896 MHz 7 frequency assignments would become secondary.

- In the 896-902 and 937-943 MHz bands 7 frequency assignments would become secondary

- In the 929-932 and 932-937 MHz bands a total of 7 frequency assignments would become non-standard.

In the 947-960 MHz band 3 frequency assignments became non-standard, due solely to frequency diversity, on the release of the policy in December 1982.

In summary, 43 Coast Guard frequency assignments would become secondary or non-standard due to one or more of the above reasons. Even though all of our frequency assignments would not be affected, all of our microwave links would be. Should we have to move to higher frequency bands the costs incurred would be unacceptable. On the West Coast, for instance, we would have to reconfigure our systems to avoid the losses suffered at higher frequencies. However, there are also some systems where reconfiguration would not be possible because long over-water distances between sites make the use of repeaters impossible.

We therefore oppose the proposed policy, and do not support the proposed changes to the Canadian Table of Frequency Allocations, unless the Canadian Coast Guard is provided with protection for our microwave systems for the duration of the normal lifetime of the equipment.

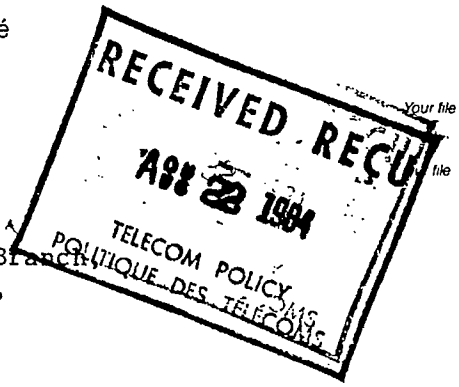
Yours very truly,

B.B. Borodchak,
Director General,
Telecommunications and Electronics.

Health and Welfare Canada
Santé et Bien-être social Canada

Health Services and Promotion Branch
Direction générale des services et de la promotion de la santé

DSRS



1984-08-16

Your file / Votre référence

Our file / Notre référence

Mr. V. Hill,
Director General,
National Telecommunications Branch,
Department of Communications,
365 Laurier Avenue West,
OTTAWA, Ontario.
K1A 0C8

Dear Mr. Hill:

Re: DGTP-003-84/DGTR-014-84 and DGTP-006-84/TRS-015-84

Basically, we are in agreement with both proposals. We appreciate that these are necessary to enable a viable, satellite related, mobile telecommunications system to be established and that provision is being made for ease of coordination with terrestrial mobile systems.

While health care is primarily a provincial concern, we are responsible to ensure a degree of national coordination, and to promote federal planning which will meet the needs of provincial health systems. In this case, MSAT will be a very useful addition to the communications system for health care, particularly in those areas of the country where vast distances, hills or mountains, tall buidlings, etc. render normal mobile services useless or unreliable. We also look to greater communications capability from carriers which may not be health system related but may be temporarily coopted into this role (e.g. ships, aircraft).

While MSAT may not be as effective for mobile use in the far north, obviously any steps which will enhance communications capabilities there meet with our hearty approval. We have many nursing stations where the nurses are solely responsible for health care delivery to large, sparsely populated areas. Communications from remote families or parties to the nursing stations badly need improvement.

Yours sincerely,

David L. Martin,
Consultant,
Health Technology.

Indian and Northern Affairs Canada
Affaires indiennes et du Nord Canada

Your file Votre référence

Our file Notre référence

July 25, 1984.

Director General
Telecommunications Policy Branch
Department of Communications
300 Slater Street
OTTAWA, Ontario
K1A 0C8

Sir:-

Re: DOC proposals on frequency spectrum allocations for mobile satellite service

Department of Indian Affairs and Northern Development comments regarding:-

DGTP-003-84/DBTR-014-84 and
DGTP-006-84/TRS-015-84

DIAND agrees with the proposed UHF and L-Band frequency allocation for mobile satellite service, and stresses the urgency of establishing these frequency allocations by the end of 1984 at the latest.

DIAND's primary interest in mobile satellite services is, of course, based upon the well known problems of communications in the far north, which MSAT technology would largely overcome. We would note in addition that MSAT's value in terms of the many remote areas of Canada (other than the far north) presently poorly served communications-wise, is indisputable. MSAT would enable sparse and remotely-situated populations to enjoy telecommunications services, now available only to those living in metropolitan areas.

Given the adjacency of the proposed 806-890 MHz band to those frequencies used by territorial mobile radio and telephone services one would expect that technologies developed for those systems might be spun-off to present and later generation mobile satellite systems.

.../2

Canada

We would question the validity of the exclusion of aeronautical mobile satellite service from the 821-825, 845-851 and the 866-870 MHz frequency bands.

Concerning TRS-015-84, our only comment is that it would appear reasonable to pair the 890-896 MHz band with the 841-851 MHz band for future mobile satellite use.

Yours sincerely,

H.B. Taylor,
Northern Policy Directorate.

DSR 5

National Defence / Défense nationale

2767-6-7 (DFSM 2)
2767-6-8

29 May 1984

Distribution List

SPECTRUM REALLOCATION RELATING TO THE MOBILE SATELLITE SERVICE

Reference: Future Canada Gazette Notice DGTP-003-84/DGTR-014-84

1. As a preliminary step in DFSM's review of your proposed changes to the Canadian Allocation Tables in the bands 806-890 MHz and 890-896 MHz, DND would like to draw to DOC's attention that the National Defence Frequency List has seven, fixed lateral communications DEW Line troposcatter installations, operating in these bands.

2. These lateral links will require replacement frequencies should any proposed satellite coverage be as far north as the Canadian Arctic coast.

G.L. Mowry
Lieutenant-Colonel
Director Frequency Spectrum Management
for Chief of the Defence Staff

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National Defence Headquarters
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Quartier général de la Défense nationale
Ottawa (Ontario)
K1A 0K2

National Defence / Défense nationale

2772-11 (DFSM 2)

14 August 1984

Distribution List

PROPOSED SPECTRUM UTILIZATION POLICY 890-960 MHZ
INTERFACE WITH DND AN/SPS 49 RADARS

References: A. DGTP-006-84/TRS 015-84 Canada Gazette Part 1
B. Meeting DND (Maj McCaw, DFSM 2)/ DOC (Mr. Hunt, Mr. Roberts) 3 August 1984
C. Application for Frequency Allocation AN/SPS-49 (V) 5 Long Range Early Warning Air Search Radar Set

1. The Department of National Defence wishes to comment on the proposed changes to the 890-960 MHz Canadian Table of Frequency Allocations as these changes affect the Canadian Patrol Frigate and the Tribal Class Update Radar Acquisition Program. DND recognizes that it is difficult for the Department of Communications to clear the band 902 to 928 MHz in its entirety for the use of DND, nevertheless this must be the aim of the civil negotiations which will take place as a result of reference A.

2. At table 1 to reference C, DFSM submitted the list of the 48 operating frequencies of the AN/SPS-49 Radar. These frequencies are divided into three sub-bands; one to sixteen, seventeen to thirty-two and thirty-three to forty-eight. Notwithstanding that the Department of National Defence requests in the interests of the defence of Canada, that the portion of spectrum from 902.999984 to 926.111088 be cleared for the SPS-49 Radar, should this prove an impossibility; DND is willing to offer two further options for the utilization of the AN/SPS-49 Radar from the jetty seaward, these are:

a. in sub-band two (frequencies 17 to 32) DND requires frequencies 27 to 32. In sub-band three (frequencies 33 to 48) DND requires any five of frequencies 33 to 40). This option is being offered to allow the frequency complement assigned by DOC to be within the 902 to 928 bands specified by reference A;

b. DND would accept five cleared frequencies in each of any two of the three SPS-49 sub-bands (for a total of 10 cleared frequencies) for use from the jetty seaward.

3. In addition to the requirements of para 2 above, DND has a requirement to operate the radar over the full tuning range; that is from frequencies one to forty-eight, within the territorial waters of Canada. DND is willing to accept azimuth restrictions on the pointing of the main lobe of the radar to ensure that this operational requirement will not provide sufficient signal to any land station to cause interference. In illustration, DND would be willing to write into the operational instructions for the Captains of Her Majesty's Canadian Ships restriction as to the operation of the radar (on frequencies other than those cleared in para 2 above) to the effect that the Captain would be responsible for determining his position on a chart, drawing an angular displacement from the nearest head lands to the ship and keeping the main lobe, say, ten degrees away from the left hand and right hand arc of that angular displacement. DND requests that the Department of Communications determine a suitable offset angle from the antenna polar diagrams provided with the submission at reference C and advise DFSM of their wishes.

G.L. Mowry
Lieutenant-Colonel
Director Frequency Spectrum Management
for Chief of the Defence Staff

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Department of Communications Director General Telecommunications Policy Branch 300 Slater Street Ottawa, Ontario	PMO CPF PMO TRUMP DMRS

National Defence / Défense nationale

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2767-6-7 (DFSM 2)
2767-6-8

16 August 1984

Distribution List

FREQUENCY SPECTRUM REALLOCATION
AERONAUTICAL SATELLITES (EARTH TO SPACE) (ROUTE)
TO BECOME MOBILE SATELLITE (EARTH TO SPACE)

References: A. 2769-9 (DTACE-5) 22 May 84 NOTAL
B. 2767-6-7/2767-6-8 (DFSM 2) 30 May 84
C. DGPT-003-84/DGTR-014-84, Canada Gazette Part 1 Department of Communications

The Department of National Defence has no objections to the proposed changes to the Canadian Allocation Tables at reference C save to comment again, as in reference B, that 7 FIXED lateral communications DEW Line Troposcatter installations may require frequency changes.

G.L. Mowry
Lieutenant-Colonel
Director Frequency Spectrum Management
for Chief of the Defence Staff

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Director General
Telecommunications Policy
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Department of Communications
Journal North Tower
Ottawa, Canada

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K1A 0K2

Quartier général de la Défense nationale
Ottawa (Ontario)
K1A 0K2

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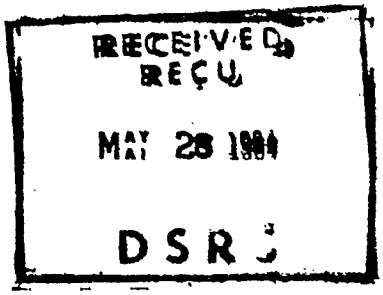
National Research Council Canada
Conseil national de recherches Canada

Herzberg Institute of Astrophysics
Institut Herzberg d'astrophysique

Ottawa, Canada
K1A 0R6

File Référence

May 24, 1984



Mr. V. Hill
Director General
Telecommunications Policy Branch
Department of Communications
300 Slater St.
Ottawa, Ont.
K1A 0C8

Dear Mr. Hill:

RE: CANADA GAZETTE PART I, MAY 4, 1984, DGTP-003-84/DGTR-014-84

I am pleased to have the opportunity to comment on the proposed reallocation of spectrum to the Mobile Satellite Service as presented in the Canada Gazette, Part I, May 4, 1984.

I am concerned with the proposed introduction of the Mobile Satellite into the band 1660-1660.5 MHz to share with radio astronomy. The existing allocation has the incompatible services of radio astronomy and the aeronautical mobile satellite sharing this 0.5 MHz band. The substitution of the aeronautical mobile satellite by the more general mobile satellite service can only make the sharing situation worse. Radio astronomers use this band for observations of the hydroxyl radical in interstellar clouds and in external galaxies. CCIR Recommendation 314 lists the lower limit of the required band as 1659.8 MHz. Band edge problems would appear to dictate 1659.5 MHz as the upper limit for any aeronautical or space usage of the band.

Therefore I would recommend that in any reallocation of the band the mobile satellite service be limited to frequencies below 1659.5 MHz and that the aeronautical mobile service be deleted from the band 1659.5 to 1660.5 MHz. In addition footnote 735 should be modified to cover the frequency range 1664.5-1659.5 MHz.

Thank you for the opportunity to comment.

Yours truly,

Larry H. Doherty

Dr. L.H. Doherty
Astronomy Section

Telex 053-3715
Télex 053-3715

Canada

6

Ontario

Ministry of
Transportation and
Communications

Communications Division
1201 Wilson Avenue
East Building
Downsview, Ontario
M3M 1J8

(416) 248-3567

July 18, 1984

Mr. V. Hill
Director General
Telecommunications Policy Branch
Department of Communications
300 Slater Street
Ottawa, Ontario
K1A 0C8

Dear Mr. Hill:

Re: The Canada Gazette, Part I, dated June 2, 1984,
Notice No. DGTP-006-84/TRS-015-84

The subject document has been reviewed by this office. We agree to the proposed re-allocation of frequencies and the proposed spectrum utilization policy for the services in the band 890-960 MHZ.

The objective of MSAT is to provide an improved nationwide mobile telecommunication services to underserved areas of Canada. It is a meaningful program which will be beneficial not only to telecommunications users, but also the service providers, the industry and the governments.

In order to ensure the success of the program, sufficient frequency bands should be designated for its applications.

Yours truly,

Dick W. K. Ko, P. Eng.
Communications Division

DK/lc

CDNMOTOROLATOR

5763
time: 120PM

08/17/84 13:00:45

AUGUST 17/84.

TO MR. VINCE HILL - D.O.C. OTTAWA

CC MR. YURI KRAAV - R.A.B.C.

FM LLOYD KUBIS - CHAIRMAN, L.F.M.C. OF R.A.B.C.

RE DGTP-003-84/DGTR-014-84
SPECTRUM REALLOCATION RELATING TO THE MOBILE SATELLITE SERVICE.

THE LAND FIXED AND MOBILE COMMITTEE OF THE RADIO ADVISORY BOARD OF CANADA WISHES TO ADVISE THAT IT WILL NOT BE ABLE TO SUBMIT COMMENT ON THE ABOVE NOTICE UNTIL MID-SEPTEMBER BECAUSE THE COMMITTEE HAS FOUND IT IMPOSSIBLE TO MEET DURING THE SUMMER VACATION PERIOD.

THE USE OF LAND MOBILE SPECTRUM IS OF VITAL INTEREST TO OUR COMMITTEE MEMBERS AND, THUS, THE PROPOSED REALLOCATION REQUIRES THOROUGH STUDY AND DISCUSSION BY OUR MEMBERS IN ORDER THAT WE CAN PROVIDE A MEANINGFUL RESPONSE.

ALTHOUGH OUR COMMITTEE HAS NO PARTICULAR COMMENT AS TO WHETHER OR NOT A MOBILE SATELLITE SERVICE SHOULD BE IMPLEMENTED, IT HAS SERIOUS CONCERN ABOUT THE LOCATION OF SUCH A SERVICE IN THE 800MHZ BAND, A BAND THAT IS SO HIGHLY USEABLE FOR TERRESTRIAL LAND MOBILE SERVICES, PARTICULARLY WHEN OTHER BANDS ARE POTENTIALLY AVAILABLE AND USEABLE FOR SUCH A SATELLITE BASED SERVICE.

I APOLOGISE FOR ANY INCONVENIENCE THAT THIS DELAY MAY HAVE GIVEN YOU.

YOURS

LLOYD K S

CHAIRM L.F.M.C.

CDNM[illegible]OLATOR

COMTEL OTT

Royal Canadian Mounted Police | Gendarmerie royale du Canada

DSRS-5100-6

84-07-18

Director General,
Telecommunications Policy Branch,
Department of Communications Library,
300 Slater Street,
Ottawa, Ontario,
K1A 0C8.

Dear Sir:

Re: Submission in Response
to Canada Gazette Notices
Relating to the Re-allocation
of Spectrum for Mobile Satellite Service

This letter is submitted in support of the proposed spectrum re-allocations relating to the Mobile Satellite Service as described in the Canada Gazette, Part I, Notice reference numbers DGTP-003-84/DGTR-014-84 and DGTP-006-84/TRS-015-84, dated 84-05-04 and 84-05-25 respectively.

The R.C.M. Police, who is tasked with the responsibility of providing police services in many remote northern areas, is extremely interested in seeing a satellite service implemented. This service will have a significant impact in the future on our effectiveness in policing these remote areas. The R.C.M. Police has established comprehensive mobile terrestrial communications systems in the populated southern regions, but similar such service in the remote northern areas has not been practical due to the vastness of the area and the inherent isolation. Realizing the benefits of such a service, we wholeheartedly support this development.

We appreciate the importance and the urgency associated with setting aside frequency spectrum at this time for such a service, to ensure reliable interference free communications in the future. Failure to act now could result in a move to another band where user radio equipment is not readily available on the current market and, therefore, very costly.

.../2

Canada

The proposed spectrum re-allocations as described in the above referenced Gazette Notices are, therefore, fully supported by the R.C.M. Police with one exception. Our concern pertains to the total exclusion of aeronautical mobile-satellite service in the 806-890 MHz sub-bands. The R.C.M. Police has a definite requirement for communications of this nature, as aircraft are frequently used in support of police operations.

As stated earlier, the R.C.M. Police realizes and supports the urgency of these allocations, particularly if we hope to see the MSAT program implemented as scheduled. We have actually delayed the further development of terrestrial communications systems in the northern regions in anticipation of participating in the pending mobile-satellite service. Failure to allocate the necessary mobile-satellite spectrum could result in the delay or cancellation of the MSAT program and, hence, deny Canadians in the remote northern regions the benefit of efficient, reliable police protection and services as common place in the more populated areas of this country.

Yours truly,

W.J. Wylie, Assistant Commissioner,
Director, Informatics.

1200 Alta Vista Drive,
Ottawa, Ontario,
K1A 0R2.

Transport Canada / Transports Canada

Air / Air
Place de Ville (FSMS/A)
Tower C, Area 10G
Ottawa, Ontario
K1A 0N8

Your file / Votre référence

Our File / Notre référence
6651-0 (FSMS/A)

AUG / AOUT 14 1984

Mr. Parke Davis
Director
Spectrum and Radio Systems Policy
Department of Communications
Journal Tower North
300 Slater Street
Ottawa, Ontario
K1A 0C8

Dear Mr. Davis:

Attached you will find a copy of a letter dated July 3, 1984 to Mr. R. Rabinovitch, Deputy Minister of your department which was in response to Canada Gazette Part I notice number DGTP-003-84/TRS-014-84 concerning proposed reallocation of spectrum relating to the Mobile Satellite Service.

In his response to our letter Mr. Rabinovitch indicated that unless advised to the contrary he would not have our letter listed as a formal response to the Canada Gazette Notice nor put on the public record.

Please consider this letter as our request that the attached letter to Mr. Rabinovitch be considered as our formal response to your Canada Gazette Notice specified in paragraph 1 and should be placed on the public record.

Thank you for your consideration in this matter.

Yours truly

J.M. Belcher
Director
Facility Engineering and
Systems Development
Air Administration

RECEIVED / REÇU
AUG 17 1984
DSRS

Attach.

Canada

Deputy Minister
Transport Canada

Sous-ministre
Transports Canada

Place de Ville
Ottawa
K1A 0N5

6651-0 (FSMS/A)

JUL -3 1984
JUIL

Mr. R. Rabinovitch,
Deputy Minister,
Department of Communications,
Journal Tower North Building,
300 Slater Street,
Ottawa, Ontario.
K1A 0C8

Dear Mr. Rabinovitch:

This has reference to Canada Gazette Part I notice No. DGTP-003-84/TRS-014-84 concerning spectrum reallocation relating to the Mobile Satellite Service. In particular, we refer to the proposed reallocation of the Aeronautical Mobile Satellite (R) bands 1545-1559 MHz and 1646.5-1660.5 MHz to the Mobile Satellite Service.

You will recall that the 1979 General World Administrative Radio Conference allocated this spectrum to the Aeronautical Mobile Satellite Service. Since then, a number of organizations have been examining requirements of satellite systems that might use these two bands. For example: INMARSAT has indicated a need for 1 MHz in each direction aboard a new satellite for a preliminary demonstration of digital ATC communication with aircraft; The European Space Agency is planning, as part of the PROSAT aeronautical program, to evaluate digitized data and voice communication with aircraft carrying airborne terminals; A Radio Technical Commission for Aeronautics (RTCA) Special Committee (155) is developing user requirements for an Aeronautical Satellite Service; Transport Canada has conducted flight tests using the MARECS Satellite to study modulation and coding techniques.

The International Civil Aviation Organization has established a committee to deal with Future Air Navigation Systems (FANS). This committee will, inter alia, evaluate future requirements for Aeronautical Mobile Satellite communications. To ensure that this matter is given early consideration we will submit a paper (see attached) to the FANS committee meeting to be held 9-13 July 1984 in Montreal.

.../2

Canada

Our paper asks the committee to determine the type of satellite system foreseen and the amount of spectrum required for an Aeronautical Satellite System to operate in these bands.

An effective Air Traffic Control or Flight Regularity Service involving aircraft is, of necessity, essentially worldwide. The safety aspect of an ATC service normally dictates against a sharing arrangement with other services. In order to plan a worldwide aeronautical system an exclusive worldwide allocation to Aeronautical Mobile Satellite (R) is required.

With the foregoing in mind, we believe that any effort to reallocate the two bands involved is, at best, premature. Canada should await the results of current efforts as mentioned above to determine the needs of the Aeronautical Mobile Satellite Service.

We will be in a better position to advise you of our spectral needs when the FANS committee has completed its deliberations. In the meantime, we believe that any non-aeronautical system that might operate in these two bands will do so at considerable risk should an Aeronautical Mobile Satellite System subsequently be put into operation. Canada will no doubt wish to participate in such an Aeronautical Mobile Satellite System and we believe it to be inappropriate to reallocate this spectrum outside of the ITU forum or invest in a Mobile Satellite System that would be at risk to the primary service.

We will contact you again when the report of the FANS committee deliberations regarding the matter is available to use.

Yours sincerely,

ORIGINAL SIGNED BY
ORIGINAL SIGNÉ PAR
R. M. WITHERS

R.M. Withers

Attachment

THE SPECIAL COMMITTEE ON FUTURE AIR NAVIGATION SYSTEMS (FANS)

First Meeting, 9-13 July 1984, Montreal

SPECTRUM RESERVATION FOR AERONAUTICAL MOBILE SATELLITE

(Presented by Canada)

SUMMARY

This paper draws attention to outside pressure to reallocate the Aeronautical Mobile Satellite Spectrum at 1500 MHz to a General Mobile Satellite Service.

1. Introduction

1.1 The committee's task, amongst other things, will be to consider the role of satellite systems within the future air navigation systems. At present there are only two bands (1545-1559 MHz space to earth and 1646.5-1660.5 MHz earth to space) allocated to the Aeronautical Mobile Satellite (R) service. Because of a perceived inactivity in these bands, other services are requesting access to these aeronautical bands.

2. Background

2.1 The Aeronautical Mobile Satellite Service obtained two 15 MHz sub-bands at the ITU World Administrative Radio Conference for Space Telecommunications (Geneva 1971). These are the space to earth link at 1545-1559 MHz and the earth to space link at 1646.5-1660.5 MHz.

2.2 At a recent ITU General World Administrative Radio Conference (Geneva 1979), there was pressure from a growing Maritime Satellite Service to reallocate part of the spectrum to the Maritime Service. At that time, the Aeronautical community was able to put forward sufficient justification to retain most of the band as exclusively aeronautical. Additional spectrum was obtained for the Maritime Mobile Satellite Service from elsewhere with the Aeronautical Service loosing 1 MHz of spectrum in each of the above bands.

2.3 There has been considerable activity related to determining applications for space techniques for aeronautical purposes since the formation of the ASTRA panel in 1968. This culminated in a first firm proposal by INMARSAT to use 1 MHz in each band for their next generation satellite for an early introduction of digital ATC communication to aircraft. In addition, agencies and companies are currently developing airborne terminals featuring the advanced technology that could be implemented in future generation of mobile communication satellite. A technique being pursued relates to the implementation of spread spectrum coding to achieve the required level of link reliability and to effectively combat multipath. For such a system, the channel bandwidth could be in the order of 500 kHz to one MHz. In order to satisfy the channel requirements for ATC, company communication and passenger communication for the different geographic areas being serviced by a satellite, the present band allocation should be preserved.

...2

Existing (MHz)	Example of Proposed change (MHz)
1544-1545 MOBILE-SATELLITE (space to Earth) 722 727 728	1544-1559 MOBILE-SATELLITE (space to Earth) 722 727 728 729 730
1545-1559 AERONAUTICAL MOBILE-SATELLITE (R) (space to Earth) 722 727 729 730	
1645.5-1646.5 MOBILE-SATELLITE (Earth to space) 722 728	1645.5-1660 MOBILE-SATELLITE (Earth to space) 722 727 728 730 735
1646.5-1660 AERONAUTICAL MOBILE-SATELLITE (R) (Earth to space) 722 727 730 735	
1660-1660.5 AERONAUTICAL MOBILE-SATELLITE (R) (Earth to space) RADIO ASTRONOMY 722 735 736	1660-1660.5 MOBILE-SATELLITE (Earth to space) RADIO ASTRONOMY 722 735 736

.4 In recent years, a number of systems other than Aeronautical Mobile have been proposed that could operate in these bands. This has resulted in proposals to change the allocation from Aeronautical Mobile Satellite (R) Service to Mobile Satellite Service. (See Appendix 1). The idea being that a Mobile Satellite allocation will make more efficient use of the spectrum since a broader range of service could be provided. This resulted in the current exclusive Aeronautical Mobile Satellite Service allocation being threatened by other potential mobile applications.

3. Conclusions

3.1 To operate an effective Aeronautical Satellite Service in support of ATC operations and safety related company traffic, it is necessary to have exclusive use of the spectrum. To this end, it is proposed that the FANS Committee firm up requirements for the type of Satellite system and amount of spectrum required for an exclusive allocation to the Aeronautical Mobile Satellite Service.