

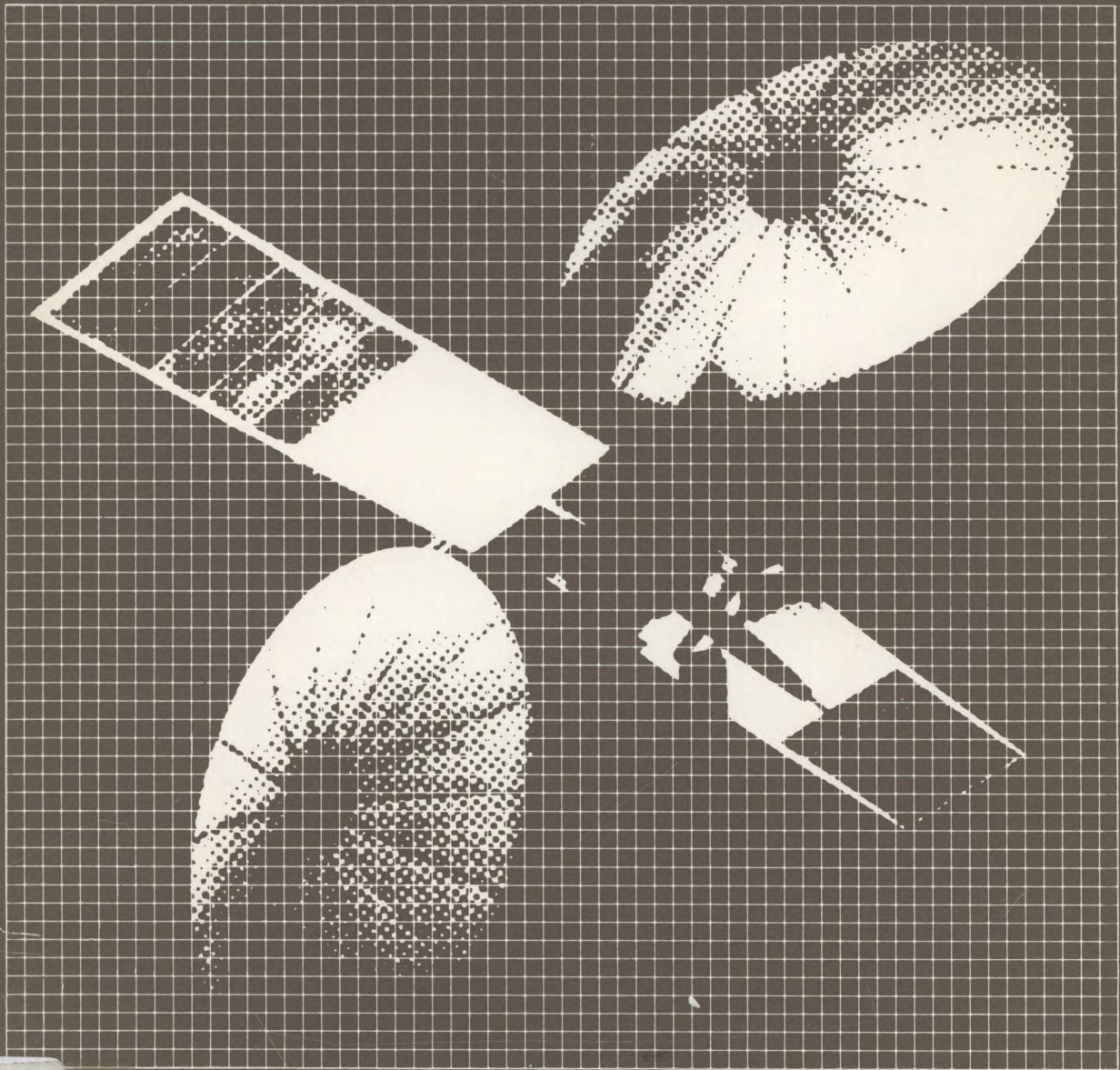
MSAT USERS' GUIDE

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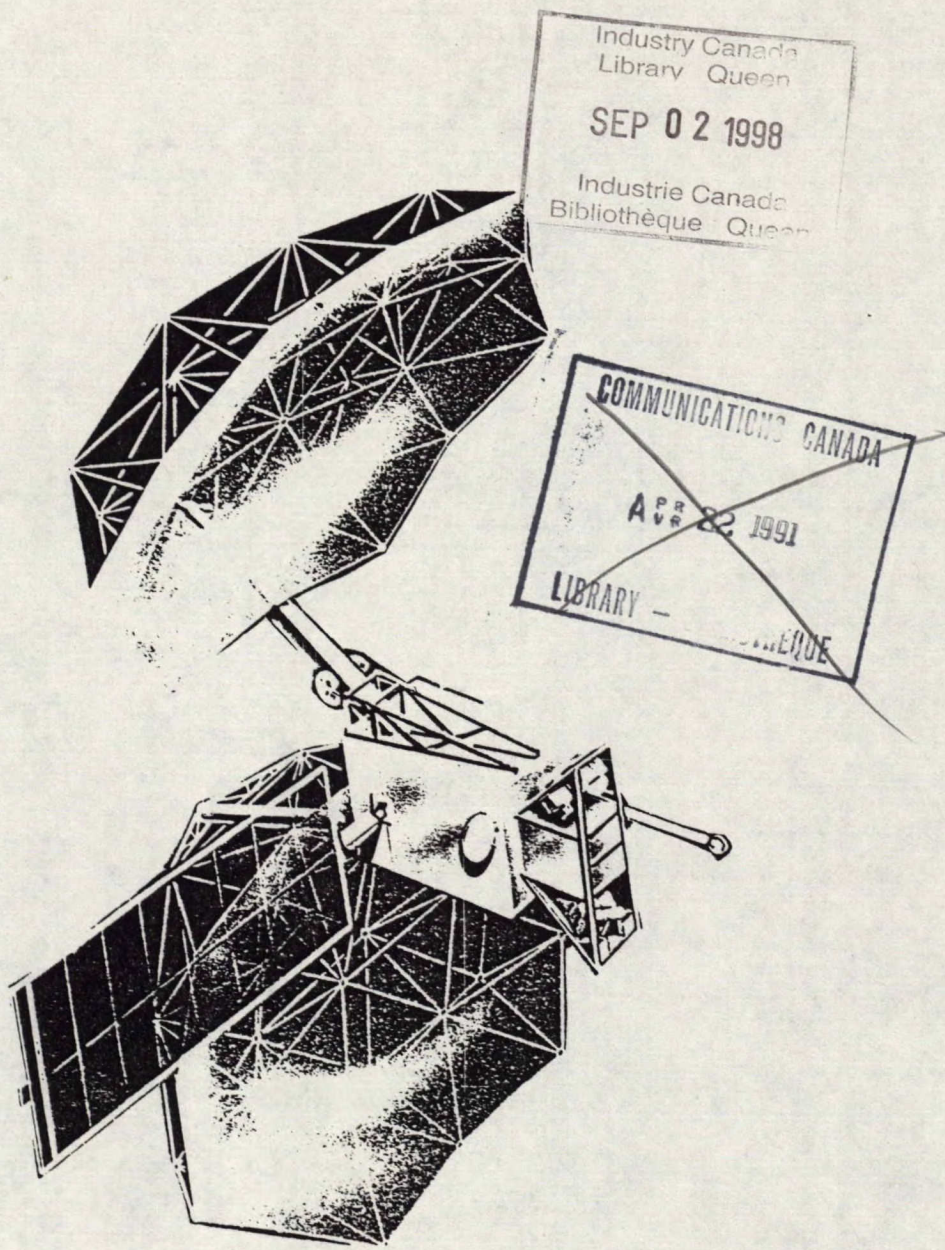
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MSAT USERS' GUIDE



MSAT PROGRAM OFFICE
SPACE PROGRAMS
DEPARTMENT OF COMMUNICATIONS
365 LAURIER AVENUE WEST
OTTAWA, ONTARIO

MOBILE COMMUNICATIONS SATELLITE (MSAT)

Date: 28 July 1983

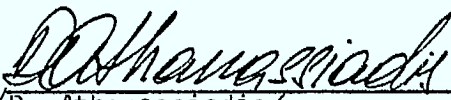
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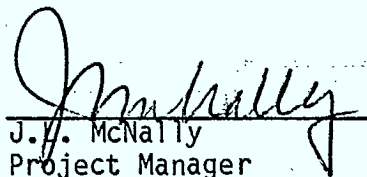
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Reviewed By:



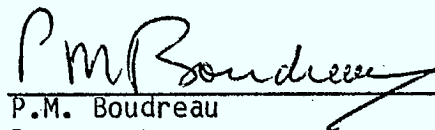
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Communications Program and Policy



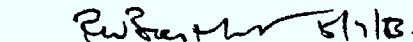
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DL 10447157

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FOREWORD

This guide addresses a number of topics such as service charges, selection criteria, and user responsibilities which will require government approval as a matter of policy.

The information provided herewith should therefore be considered as preliminary and provisional only, for the purpose of providing early information to prospective users and may be subject to some change at a later date.

INTRODUCTION

This guide has been prepared for mobile communications users, service providers and manufacturers who wish to participate in MSAT trial and interim service following launch of the satellite in 1988.

The background section is brief and intended to provide the rationale leading the MSAT Post-Launch Communications Program, rather than trace the overall MSAT project background.

The section on the Post-Launch Communications Program is intended to generate an awareness of the aims of the program as well as the major actions required of prospective participants for the effective planning of the program.

Subsequent sections deal with specific terms and conditions for participation in the program, such as eligibility, priority, service charges, etc.

The final section entitled how to become a participant explains the overall procedure for participation as a series of simple and clearly defined steps.

The "MSAT Users' Guide" is complementary to the "MSAT Phase B Project Plan", the "MSAT Service Description" and the "MSAT Communications System Concept" documents which have already been issued.

1. BACKGROUND

Mobile communications may be defined as communications between two or more stations at least one of which is mobile by virtue of being installed in an aircraft, ship or land vehicle, or being transportable.

At the present time, there are only terrestrial mobile communications systems in Canada. They provide two main types of service:

1. Mobile Radio Service (MRS), which consists of voice communications mainly between a mobile radio and a base station without inter-connection with the switched telephone network.
2. Mobile Telephone Service (MTS), which is a service provided to the public by a telephone company as an extension to its normal telephone service.

There are approximately 400,000 mobile radios operating in thousands of independent systems, and about 50,000 mobile telephone subscribers, mostly in metropolitan areas.

At the World Administrative Radio Conference (WARC) in 1979, it was decided to permit shared satellite and terrestrial communications services to mobile radio and telephone users in the 806-890 MHz frequency band. To date this has resulted in the development of cellular mobile telephone and conventional/trunked land mobile radio services in the 800 MHz band.

Terrestrial systems provide cost-effective services in urban areas and also in some rural areas of Canada. However, there is an urgent need for better coverage and a higher quality of service in rural and remote

areas of the country, where satellites are expected to be much more cost effective than terrestrial systems.

With a view to satisfying this need, the Department of Communications (DOC), with the expected cooperation of the U.S. National Aeronautics and Space Administration (NASA), plans to launch in early 1988 a mobile satellite demonstration system called MSAT, which will be used for communications experiments, service development and trial services to vehicles, ships, aircraft, compact portable terminals and fixed terminals. It will complement terrestrial systems and provide the missing link required to create an nation-wide integrated mobile communications system at 800 MHz.

The predominant impetus behind the DOC's decision to proceed with the MSAT program is the ultimate development of a commercially viable MSAT service that will benefit service and equipment providers and users alike.

Consistent with its mandate to foster the development of telecommunications services, the DOC is proposing to assume a lead role to implement a demonstration MSAT system and to develop a customer base of sufficient magnitude so as to ensure the commercial viability of ongoing MSAT services through subsequent commercial MSAT systems to be implemented by the private sector. Such a demonstration program can only be undertaken however with the active participation of the telecommunications carriers, the manufacturing industry and the users.

The net cost to government to accomplish the above goals will range between 200M and 250M 1982 dollars. Obviously, the DOC could not proceed to obtain approval of such a program without tangible proof of the service need and the ultimate technological and financial feasibility. For this reason the program is separated into a number of phases

(see attachment # 1). Of these phases the most crucial is Phase B which commenced in April 1982 and is scheduled to be completed in mid 1984. By the end of Phase B approximately 20M dollars will have been expended (less than 10% of the total) for the purpose of reducing risks associated with the expenditure of the funds required to implement an MSAT system and to demonstrate the numerous commercial and socio-economic benefits to be derived.

There is a large number of activities scheduled in Phase B, aimed at defining and justifying an MSAT Program.

The main activities can be summarized as follows:

- Detailed definition of the MSAT demonstration system, cost estimates and program schedules.
- Viability assessment of commercial follow-on systems and plans for marketing associated services, products and technology.
- A comprehensive Post-Launch Communications Program plan for trial and interim services as well as cost recovery.
- An assessment of all socio-economic benefits.
- Proposals for the resolution of regulatory, policy and institutional questions.

This guide discusses only those activities which are integral or related to the MSAT Post-Launch Communications Program for the purpose of providing potential users with:

- a) A clear understanding of the purpose behind the activities;

- b) The inputs and actions expected of them as participants;
- c) The guidelines which are expected to govern the respective obligations of the DOC and participating users;
- d) The methodology for participation; and
- e) The long term strategy for the transition to a commercial service to be offered by the private sector.

For information on MSAT services and the MSAT system the reader should consult the "MSAT Service Description" and the "MSAT Communications System Concept" documents.

2. THE POST-LAUNCH COMMUNICATIONS PROGRAM (PLCP)

2.1 A Blueprint For Commercial Success

The aims of the Post-Launch Communications Program go far beyond the mere provision of trial service and its activities are by no means limited to those planned for the post-launch period. In fact the most crucial activities of the program are those scheduled prior to the launch, especially the planning and definition activities included in the MSAT Phase B. These activities will be instrumental in defining the service offering, establishing actual user service demand, planning the course for the transition to commercial service and, in general, providing an answer to the key question: to what extent and how effectively do MSAT services fill the need for mobile telecommunications?

The plan governing the conduct of the Post-Launch Communications Program program has been developed with the above question in mind. It is, therefore, a blueprint for planning and projecting commercial

success and not an academic exercise in new satellite communications services.

The three main functions of the Post-Launch Communications Program are:

- i) Service definition.
- ii) Provision of trial service.
- iii) Establishment of service continuity.

Accomplishing these functions requires a number of DOC initiatives and associated user actions. These are discussed in the following paragraphs.

2.2 Service Definition

The success of any new communications system can be judged by the degree of acceptance and value attached to its services by the marketplace. For major communications systems, such as MSAT, the process of arriving at the optimum service offering is best achieved through a phased process as follows:

- a) Identification and definition of the broad service categories, usually arrived at by the design authority and based on general needs.
- b) Identification and definition of specific service variations to cater to individual user applications. This process requires an extensive interaction between the design authority and the users.

The Post-Launch Communications Program definition activities to be conducted during Phase B will provide the interaction required in (b) as follows:

- a) By initiating dialogue between the DOC and interested users and telecommunications carriers well in advance of the implementation of final hardware and software for the MSAT demonstration system.
- b) By providing some technical assistance to interested users in the definition of their specific application requirements and, where appropriate, translating these requirements into system design parameters.
- c) By ensuring that interested users with valid MSAT applications be given the opportunity to participate in the planning for trial service followed by interim service, if required.
- d) By keeping all users informed of service improvements and refinements as they develop.

User Action Required

Users can both benefit from and contribute to the detailed service definition by:

- a) Attending any of the briefing sessions on MSAT organized by the DOC or through separate dialogue.
- b) Identifying application areas that can potentially be best served through MSAT.
- c) Discussing these applications with appropriate MSAT staff in Ottawa or MSAT support staff in the DOC Regional Offices and generating, in common, detailed service application requirements.
- d) Taking appropriate steps, as indicated in subsequent sections, to ensure proper participation in the program.

2.3 Provision of Trial Service

Once service application areas have been defined to the common satisfaction of the DOC and interested users, arrangements will have to be made to ensure that users will be given the opportunity to obtain trial service in order to assess the performance and operating effectiveness of the system so that they make a viability decision regarding this service.

The Post-Launch Communications Program is designed to afford users this opportunity through the following provisions:

- a) Allocation of sufficient MSAT system capacity for trial service. (See section on selection - priority).
- b) Cost free use for trial service of the MSAT space and ground segment including a limited number of appropriate customer terminals. (See section on service charges).

User Action Required

Users, having arrived at the initial assessment that MSAT should provide viable services for their service applications and having discussed their requirements with the DOC communications program personnel, will have to notify the DOC of their intent to participate in the demonstration program as soon as possible.

An early application does not imply outright commitment on the part of the user but it will enhance the chance of participation. (See Section on selection-priority).

2.4 Establishment of Service Continuity

One of the most important factors in the user acceptance of new service offerings is continuity between a trial and fully commercial service.

The Post-Launch Communications Program is designed to provide such continuity and smooth transition as follows:

- a) As mentioned before, after the launch of the demonstration satellite, interested users will be given the opportunity to obtain trial service. It is anticipated that the majority of such trials will have been concluded within two years of the launch date, although some capacity for trial services will be retained throughout the life of the system.

Given that the life of the demonstration system is 7 years, there will be at least 5 years in which most of the system capacity will be used for the provision of interim service. Such a service will meet two goals:

- i) It will permit committed users to obtain continuous service until such time as the follow on commercial system is available.
 - ii) It will allow the government to recover some of its investment.
- b) The DOC will collaborate with future service providers for the provision of interim service and to ensure that viable services offered under interim service will be available on an ongoing basis in subsequent commercial systems as commercial services.

c) The DOC will coordinate all aspects of the transition from trial to interim and to commercial MSAT service by:

- i) Ensuring that the appropriate regulatory bodies consider issues, as required, for the provision of MSAT services to the public.
- ii) Working closely with and licencing the appropriate private sector organizations for the provision of MSAT services.

User Actions Required

Users requesting trial service will at the same time indicate a projected level of service demand for interim service or commercial service or both. Such projections must be as realistic as possible although it is appreciated that due to the time lag of the actual system implementation all such projections will be approximate and subject to subsequent revision. Such revisions may be necessary due to changing operating and economic conditions which affect the user's operations and will be conditional upon the proven operational performance and cost effectiveness of MSAT services. Yet these non-binding projections of interim service and commercial service are crucial in order to ensure that:

- i) Users expecting to use interim service will get early considerations for such service (See section on selection - priority).
- ii) The DOC and the ultimate service providers, in the private sector, obtain reliable demand projections in order to optimize the system and service parameters and the date of implementation of the commercial MSAT offering.
- iii) The DOC can report to Cabinet at the end of Phase B on Canadian needs for MSAT services and plans for the participation of users, service providers and the manufacturing industry in the Post-Launch Communications Program.

3. ELIGIBILITY

There are two eligibility aspects associated with the MSAT Post Launch Communications Program.

i) Eligible participants

ii) Eligible service applications

3.1 Eligible Participants

There is essentially no restriction as to who may participate as a user of trial and interim services offered under the Post-Launch Communications Program.

Any organization incorporated in Canada under federal or provincial law, or any department or agency of the federal government or of a provincial or municipal government will be able to apply to conduct trial service or interim service projects under the Post-Launch Communications Program. This will include:

- Communications service providers;
- Commercial end-users such as, marine shipping companies, bus lines, truckers, forest industries, mineral exploration companies, hydro-electric utilities and law enforcement agencies;
- Government agencies, such as law enforcement and forest-fire fighting agencies;
- Non-profit organizations, such as hospitals and educational institutions;

- Telecommunications consultants acting on behalf of their customers; and
- Manufacturers wishing to assess the performance of their products.

In order that applications for trial service be limited to manageable numbers, DOC will encourage individuals wishing to participate in the program to aggregate their requirements with those of communications carriers or other participating organizations, whenever possible.

3.2 Eligible Service Applications

In general, all mobile or fixed mobile service applications are eligible provided they can be accommodated under the general service types described in detail in the "MSAT Service Description" document. As indicated in that document, service applications within large urban centres are not covered by the MSAT system, the only exceptions being base stations or headquarters located in urban areas and communicating with mobile stations operating remotely. In certain cases technical and regulatory factors may constrain eligibility of some service applications. In addition, interconnection to the public telephone network will be subject to the agreements of the carriers offering such telephone service.

Certain other categories of remote terminals also qualify for service applications. These include remote data collection, industrial monitoring and control and transportable terminals providing narrow-band service in areas presently lacking permanent communications facilities.

Users requiring further clarification of service application eligibility should contact the DOC, as indicated on page 19.

4. AVAILABILITY AND SERVICE DURATION

Services obtained under the Post-Launch Communications Program will be subject to certain time restrictions. These restrictions will ensure that users are given sufficient opportunity to evaluate the services received, on one hand, and to prevent users from profiting unreasonably at government expense, on the other hand.

4.1 Trial Service

The trial service interval will commence a few months after the launch and will continue as long as necessary. This is not to say, however, that any given recipient of trial service will be entitled to the continuous use of the service for an indefinite period of time.

Each individual trial will last only as long as it is necessary to assess performance and service effectiveness and make a viability decision. Normally the pre-determined duration is expected to be less than one year. Users requiring a longer interval will have to substantiate the need and negotiate the terms under which an extended trial interval will be granted.

It is anticipated that most trials will have been completed within the first 2 years after the launch. During those two years ample system capacity will be reserved for trial services in order to accommodate varied users and a fair distribution across Canada. In the subsequent years, emphasis will shift to the provision of interim service with limited capacity retained for trial and experimental purposes.

4.2 Interim Service

Interim Service can commence as soon as the system operation has been verified by the design authority, that is to say a few months after the

launch. For those participants wishing to assess the results of trial service prior to subscribing for interim service, commencement of this service will follow and will be continuous to their trials.

Interim service, once obtained, will normally be available continuously up to the end of life of the demonstration system.

In order to ensure continuity of service, users will have to notify the DOC or the designated private sector organization(s) administering the interim service at least 3 months prior to the end of the trial service interval. Efforts will be made to establish user-service provider relationships as early as possible.

4.3 Commercial Service

Although the DOC will not be involved in the provision of commercial service, users are reminded that the service continuity plan calls for the continuous commercial availability (through follow-on commercial MSAT systems) of services offered under interim service.

5. SELECTION - PRIORITY

5.1 Selection

The definition of appropriate MSAT service applications is to be accomplished through a dialogue and common definition of applications between the DOC and the respective users. Thereafter, user proposals received by DOC for participation in trial and interim services will go through a selection process. This selection process will take into account a number of factors such as:

- Potential demonstrated for improved communications especially in underserved areas;
- Demonstrated intention for transition to interim service and potential for cost recovery;

- Contribution to the development of the Canadian telecommunications service industry;
- Implications on communications policy, institutional arrangements and regulations;
- Contribution to Canadian skills and to the development of Canadian space technology, products and services in the private sector;
- Contribution to other social and economic benefits;

Within the proposal evaluation and selection process it will also be necessary to ensure balanced representation of types of services, types of users, regional distribution and capacity limitation aspects.

Some of the service applications provided under the trial service may ultimately prove uneconomical or unsatisfactory. Therefore, it is anticipated that not all trial applications will be continued under interim service. The selection of those service applications that are to continue under interim service will consider:

- i) The user reaction to the trial results; and
- ii) Assessment, based on the consultation process with the ultimate service providers, as to whether or not the application would be commercially viable.

5.2 Priority

To a great extent, once proposals have gone through the selection process and accepted by the DOC, priority for access to the satellite capacity will be based on a first come first served basis. However, in order to maintain flexibility for catering to urgent applications which may be identified later in the programs, the DOC intends to retain a

certain capacity for both trial and interim service to be allotted as required.

5.2.1 Trial Service

The overall system capacity is expected to be ample to cover most trial requirements. The primary potential limiting factor is the availability of terminals that can be loaned to users free of charge. The DOC's expected budget allows for a number of such terminals to cover most trial service requirements. In the event that the demand exceeds terminal availability, late applicants will have to wait until such time as terminals become available at the termination of other trials. Alternatively late applicants could choose to buy or lease terminals (subject to regulatory arrangements) should they be anxious to obtain trial service.

5.2.2 Interim Service

An early application for trial service is much more crucial from the point of view of interim service.

Total interim service demand is expected to be large compared to the end of life capacity of the demonstration system. Therefore, in the event that interim service demand equals or exceeds system capacity, early applicants will normally be given priority access to the satellite capacity.

6. SERVICE CHARGES

The proposed MSAT program policy is that access to the MSAT satellite capacity should be provided free of charge only for as long as it takes

for the user to perform his trial or experiment and assess the viability of MSAT in his operational environment. Hence the following will apply to trial and interim service services respectively subject to government and Treasury Board approval.

6.1 Trial Service

The DOC will not charge for the use of trial services including the use of the appropriate mobile terminals.

Users will be required to incur only costs associated with the transportation and installation of the terminals, terrestrial communication charges, if applicable, and management of their trials.

The free of charge use of terminals will apply to all trial applications which do not require an excessive number or non-standard types of terminals. A given user may qualify for a number of trial applications. Applications requiring a large complement of terminals and/or custom engineered equipment will have to be negotiated on their merits with DOC.

6.2 Interim Service

For interim service, the DOC will establish a fee (service charge) which will be based on the fees that are projected to be charged for eventual commercial MSAT services. Interim service charges are expected to be lower than those applicable to commercial service to account for potential service and equipment limitations applicable to the demonstration system only. The DOC may elect to designate a number of MSAT service providers who will administer the cost recovery and other aspects of the interim service on its behalf. The objective would be to develop institutional arrangements which would facilitate transition to commercial services.

Rates for interim service will be developed and published officially well in advance of the launch of the demonstration system. The cost recovery policy for interim service will be subject to government and Treasury Board approval.

7. ROLES AND RESPONSIBILITIES

7.1 Department of Communications (DOC)

The DOC will be responsible for the following:

- 1) The management of the Post-Launch Communications Program including the selection and approval of trial and interim service projects, the scheduling of satellite time, and the monitoring of progress;
- 2) The loan to participants and maintenance of terminals including field portables, vehicle transportables, relocatables, and base stations;
- 3) The provision of limited DOC technical consultation when required for individual trials; and
- 4) The review and analysis of the results of all trial or interim service projects to evaluate their contribution to the commercial viability, industrial development, service extension and policy objectives of the Post-Launch Communications Program, as well as the anticipated socio-economic benefits of the MSAT demonstration program as a whole. Viability assessment will be made in close cooperation with the appropriate private sector organizations.

7.2 Participants

Participants will be responsible for the following:

- 1) Preparation of a service application description and a proposal to be submitted to the DOC for trial and/or interim service;
- 2) Adequate planning for the implementation of their projects within agreed-upon schedules;
- 3) The conduct of their trials and the provision of the personnel, equipment and supplies required, except for such equipment (e.g., terminals) and technical specialists as the DOC agrees to provide;
- 4) The submission of reports to the DOC on the results of their trial or interim service in accordance with an agreed schedule;
- 5) The preparation of an evaluation of the commercial viability of the mobile service they are testing;
- 6) Making a viability decision based on (5) above; and
- 7) The preparation, when appropriate, of a plan for interim service.

8. CONFIDENTIALITY OF INFORMATION

The primary objective of the MSAT demonstration program is to promote the development of mobile telecommunications systems and services in Canada. Accordingly, the DOC reserve the right to disseminate general information relating to overall trial and interim service demand and service performance. However, the DOC will not divulge to others proprietary information regarding details of specific applications.

9. HOW TO BECOME A PARTICIPANT

Step 1

Obtain MSAT service information through any of the following:

- i) MSAT user briefing sessions scheduled across the country.
- ii) DOC Regional Offices.
- iii) Participation in official instituted DOC-User working groups.
- iv) The "MSAT System and Service Description" document.

OR

Through special arrangement by contacting:

D. Athanassiadis
Manager - MSAT Post-Launch Communications Program and Policy
Department of Communications
Journal Tower South
365 Laurier Avenue West
Ottawa, Ontario
K1A 0C8
Telephone (613) 995-7783

Step 2

Consider the MSAT services offered and if you feel they can be of use to your communications needs express your interest in writing to the address provided in Step 1.

Step 3

On receipt of your letter you will be contacted by a member of staff in the communications program management in order to arrange a mutually acceptable meeting to discuss in detail your application requirements and ensure their applicability to MSAT.

Step 4

The DOC member of staff will cooperate with and, if necessary, assist your personnel in the definition of the services required and will contribute to the generation of concise service application descriptions.

Step 5

Once the service application description is prepared, you should initiate in writing, a formal proposal requesting participation in the MSAT trial and/or interim service referring to the said application description. The proposal should be prepared with the standard format to be provided by DOC and forwarded to the address in Step 1. DOC will announce in the Fall the deadline for reception of Proposals to be considered during Phase B.

Step 6

The proposal will be assessed in accordance with agreed criteria and acceptance, modification or rejection will be recommended for the concurrence of DOC management.

Step 7

The DOC will make arrangements that a formal letter of intent is drafted and signed by both parties, for the applications approved in accordance with the selection criteria.

This letter will be conditional upon the DOC receiving Government approval for implementation of the MSAT demonstration system which is expected in 1984. Similarly, this letter will be conditional upon the user's continued interest in the MSAT services.

MSAT Program Schedule

