MSAT News

No. 2 September 1983

To continue ...

This is the second issue of **MSAT News**. It is about the Mobile SATellite telecommunications system which would provide two-way mobile radio and telephone services to supplement today's short-range terrestrial mobile communications systems. A short summary of the project, from the first feasibility study in 1980 to the projected launch in early 1988 was in the first issue (available on request). We continue with a look at the post-launch program.

Is there an MSAT in your future?

In quiet corners right across this country, hundreds of people are working to assemble the pieces out of which a successful MSAT program can be made: scientists and engineers from a dozen disciplines, people solving satellite and communications problems with briefcases of computer printouts, economists reading the future of manufacturing industries, sociologists seeking the effects of MSAT on people, administrators bringing the pieces together for decisions by government.

MSAT's launch may be nearly five years away, but already one of the high priority questions is: "Who will use it?". That question needs early answers.

- the MSAT idea exists for its users: definition and design must reflect their interest
- forward-looking users need to know how their needs are to be met when they are preparing long-range plans
- the government must assess user interest to make the big financial decisions on MSAT

Demetre Athanassiadis and his staff in the Department of Communications are responsible for the post-launch communications program. They have been talking to people across the country who could benefit from MSAT. They have given briefings in 10 cities and have met more than 300 individuals and representatives of companies and of governments who are interested in the possibilities MSAT holds for them. Four major working groups have been created to hold discussions with federal departments, provincial governments, with the large common carriers, and with the Canadian Radio Common Carriers Association. A Users' Guide has been released.

MSAT would provide improved mobile communications services such as mobile radio, mobile telephone and data communications to small terminals used by fire fighters, ambulance crews, fishermen, truckers, police, pilots, resource camp operators and others.

Government of Canada
Department of Communications
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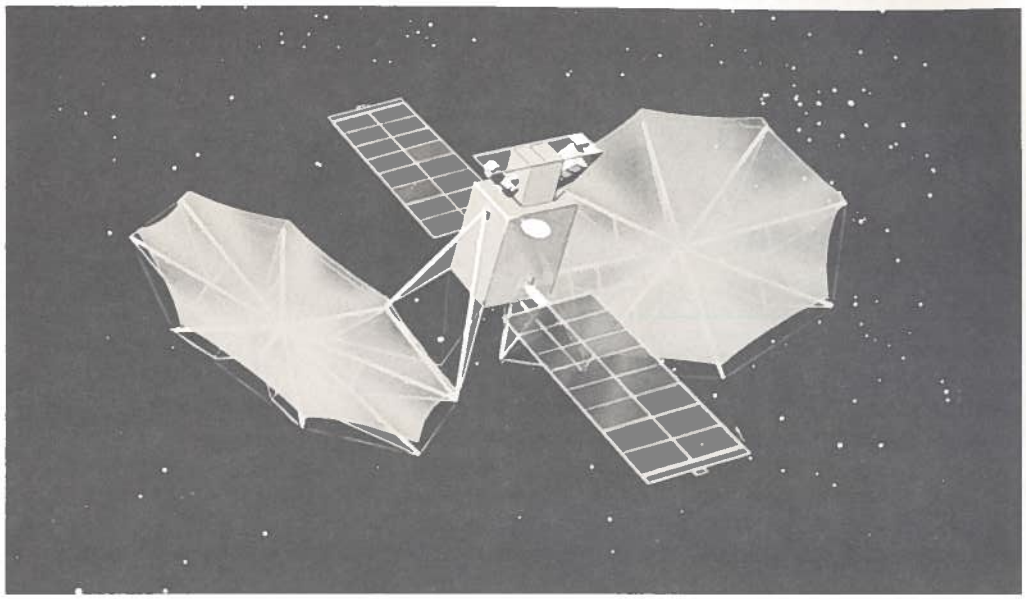

This drawing of an MSAT satellite in geostationary orbit illustrates one antenna design now under consideration.

This process contributes to a valuable interaction between users and sponsors. The users can influence the services to be offered which, in turn, will affect the system design. The designers can help users define their specific requirements and then try to ensure that the system meets them. Throughout all MSAT planning, potential users will be kept informed of service improvements and refinements.

The potential user whose application is accepted for participation in the post-launch communications program will get free trial service for up to one year to assess the value of the system. If that works out to mutual satisfaction, the next stage, without interruption, is interim service on the demonstration satellite provided on a user-pay basis. Finally, full commercial service will be available through the private sector on new commercial MSAT spacecraft expected to be launched by the mid-1990s.

Since trial service is being offered generally on a first-come first-served basis, this is the time for applications. Many have already been received. And a lot of questions are being asked ...

Who can apply?
Any Canadian organization which has a reasonable use for reliable mobile communications outside the larger cities.

What kinds of users have been interested?
Many kinds. Companies providing communications services. Commercial end-users such as marine shipping companies, bus lines, truckers, forest industries, mineral exploration companies, electric utilities, pipelines, aircraft operators. There are many government agencies such as police forces and fire-fighters. There are social service organizations, hospitals and educational institutions. Telecommunications consultants are interested on behalf of their customers. Manufacturers want to assess the performance of their products.

What about individuals?
They are being encouraged to co-operate with communications carriers or other participating organizations to avoid an undesirable proliferation of trials.

When does the trial service begin?
Within a few months after the launch, now projected for 1988.

How long does trial service last?
As long as necessary, to a maximum of one year for any individual project.

When does interim service start?
It can begin as soon as trial services go into operation. Some users may opt for interim service right away, while others will wait for an assessment of their experience with free trial service.

Who will provide commercial service?
The private sector. Unlike the first two stages, full commercial service will be provided using follow-on MSAT spacecraft to be launched by the mid-1990s

How are trial participants selected?
After discussions with the applicants, Department of Communications officials will select projects on the basis of potential for improved communications in underserved areas, social and economic benefits and other factors, taking into account the need for

a balance of types of services, users and regional distribution.

Is there any limit on the number of trial users?
Only with respect to mobile terminals. DOC hopes to have enough terminals to lend free-of-charge to all or most users. If the demand exceeds the supply, late applicants may have to wait until another user's trial is finished, or buy or lease terminals themselves.

Will all trial users move to interim service?
That depends mostly on the user's assessment of the trial and its viability for commercial service providers.

Will there be any limits on the use of interim service?
It is possible that the demand for available satellite channel capacity will exceed the supply during interim service. In general, early applicants will be given first choice, although the Department of Communications will retain some capacity to be assigned, at its discretion, to urgent cases. Late applicants might have to wait until a commercial MSAT system is available. Once granted interim commercial service though, any user will normally be guaranteed continued use of it throughout the demonstration period.

How much will all this cost the user?
For the trial period, nothing, except small charges for transportation, installation of terminals and access to terrestrial networks where applicable. The charge for interim service is expected to be based on projections of charges for eventual commercial service. In any event, rates will be published well in advance of the launch.

What obligations would the trial users have?
They are required to make an application, plan the trial within agreed schedules, conduct the trials with their own staff, equipment and supplies (except the DOC equipment on loan), submit reports and evaluations and prepare a plan for interim service.

What does the Department of Communications do?
It manages the program, approves trials and interim service projects, schedules satellite time, lends equipment for trials, offers consultations when required, recovers charges for interim services and finally analyzes the results.

Are applications public knowledge or confidential?
The Department of Communications may publish the general results of trial service projects, but will preserve the confidentiality of all proprietary information supplied by users on the results of interim service projects.

If I am interested, what should I do?
To ask about applications, participation in briefings or Department of Communications Working Groups, and to receive documentation (including the Users' Guide), please get in touch with:

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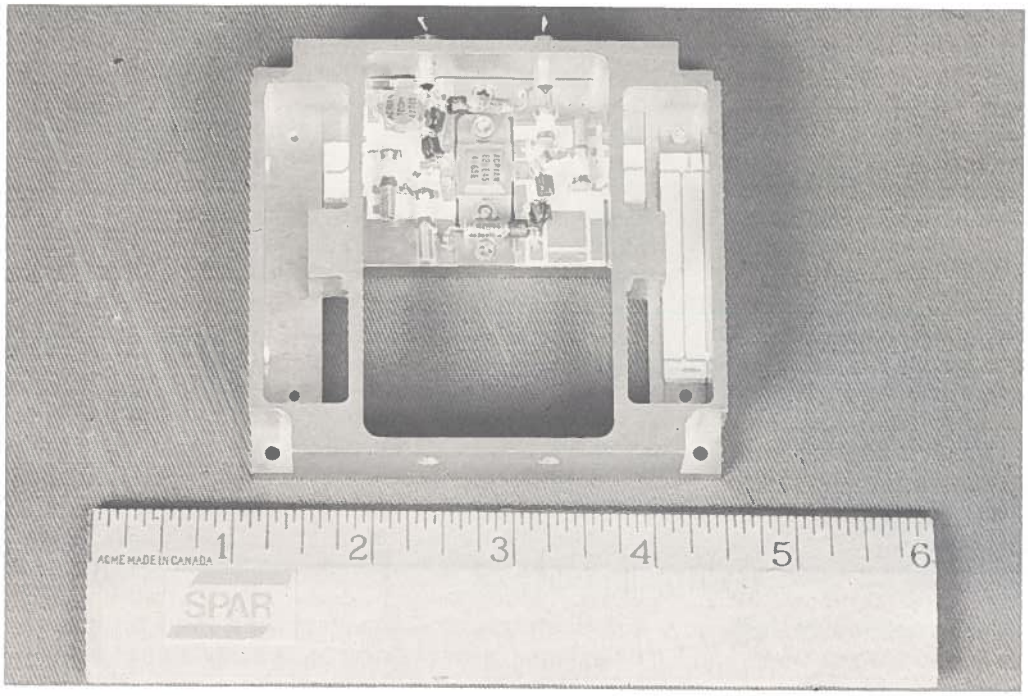
Contracts

The market definition study noted in the last issue of **MSAT News** is now well underway. Woods Gordon Management Consultants, Toronto, with sub-contracts to Consultech and Paul Bruack Associates, also of Toronto, is carrying out extensive interviews with potential users, after which they will use various hypotheses to analyze the market under different situations. For example, varying assumptions will be made about price and quality to project the market under all foreseeable circumstances. The study will also recommend how to achieve the optimum market. A major part of the research will be completed this fall, in time to be used by other parallel studies.

Telesat Canada's study of the commercial viability of mobile satellite services ties in closely with market definition. It looks at various commercial system options, the costs of these systems, and what services should be supplied and how. In examining how the market should be supplied, Telesat is also assessing other communications systems with which MSAT might be competing.

Another contract, for $175,000, has been let for a study on the effect of MSAT on Canada's manufacturing industry. This is being undertaken by a consortium of Woods Gordon, Spar Aerospace Limited of Montreal, Que., Mobile Data International (MDI) of Richmond, B.C. and Motorola Canada of Willowdale, Ont. One of the main tasks of this study will be to assess the potential foreign market for MSAT products.

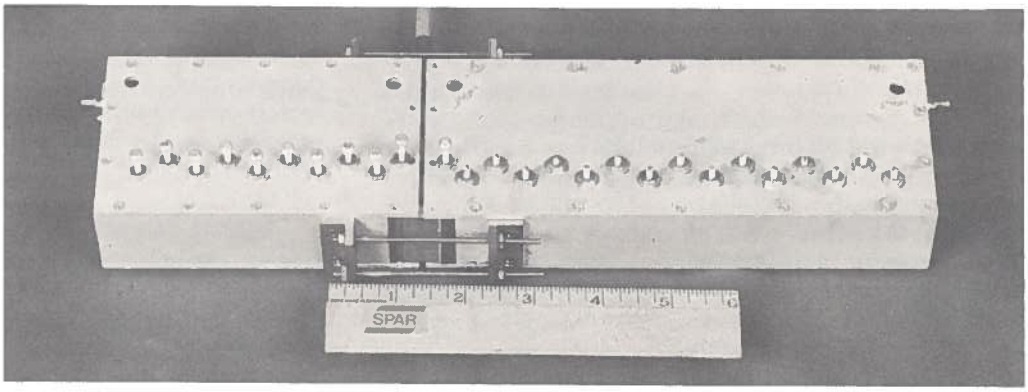
Wescom of Vancouver now has a contract for $40,000 to undertake Phase 1 of a wide-ranging study of the social impact of MSAT, including effects of MSAT on employment, access to communications, improved safety, emergency medical services, and national sovereignty: in short, almost all the effects on Canadian society other than economic considerations.



Spar Aerospace Limited

The amplifier shown here will be combined with eight or nine others in a special metal housing to form the high-powered output amplifier for an MSAT satellite. The prototype was designed and built by Spar Aerospace Limited, Montreal, for the Department of Communications.

Spar Aerospace's ultra high frequency duplexer, shown here, will allow the MSAT transmitter and receiver to use the same antenna onboard the satellite.



Spar Aerospace Limited

Work is almost complete on the preparation of three other contracts for studies which are expected to start during the fall. One is concerned with MSAT's potential as a business opportunity for the telephone companies, another for the radio common carriers and the third is a general socio-economic study.

Meanwhile, a series of contracts is underway for the engineering and technological side of MSAT. ESTEC, the technical arm of the European Space Agency, has a $107,000 contract for support in evaluation of spacecraft design. It runs from November 1982 to the end of Phase B.

Telesat Canada was also awarded a $450,000 contract in February for engineering support and assistance.

The major contract with Spar Aerospace Limited of Toronto and Montreal, noted in the last newsletter, was signed in March. Valued at $8,280,000 it is to provide spacecraft definition and technology development.

At about the same time, three contracts were signed for mobile terminal definition studies using the three modulation schemes proposed for MSAT. These were: a contract for $550,000 with ADGA Ltd. of Ottawa for definition of amplitude companded single sideband; for $405,000 with Spar for definition of linear predictive coding; and for $445,000 with Glenayre Electronics Ltd. of Vancouver for narrow band frequency modulation.

CPER Associates of Ottawa has been awarded an $82,000 contract for professional support of planning, policy studies and program evaluation for the post-launch communications program.

MDI of Richmond, B.C. has completed a short contract for definition of data terminals. A contract for definition of gateway terminals is ready to be let.

In the development of the technology for the ground segment, Canadian Astronautics Limited of Ottawa is working on a $65,000 study of mobile antennas.

The communications systems division of Spar in Montreal has been awarded a $123,000 contract to study and develop frequency control systems for mobile terminals.

In mid-June, a $200,000 contract was awarded to Miller Communications Systems of Kanata, Ont. for a study of demand assignment multiple access (DAMA) for the mobile radio service.

A number of smaller contracts are also proceeding on schedule.

Back in the office ...

By no means has all the work in Phase B of the MSAT program been contracted out. Some studies, by their nature, can best be done internally.

As an example, Department of Communications experts have been taking an early look at ways of ensuring the best possible mesh of MSAT commercial services with existing land-based mobile services. The "institutional arrangements" chosen for the service can have a big effect on the marketing of MSAT. Questions being studied include:

- Who will provide commercial MSAT services?
- Who will own the elements of the MSAT system?
- To what extent are MSAT commercial services to be regulated?
- How is radio licensing to be done?

Progress in the study of such issues will be reported in future issues of **MSAT News.**

Recent program documents

March: Communications System Concept, by J.B.D. Kent.

May: Technical paper on 800 MHz propagation experiments presented to the Vehicular Technology Conference, Institute of Electrical and Electronics Engineers (IEEE), Toronto, by J.E. Nicholson and R.W. Huck.

May: Draft Working Paper on MSAT Policy Issues, by D.F. Gilvary.

May: MSAT Service Description, by Demetre Athanassiadis.

July: MSAT Users' Guide, by Demetre Athanassiadis.

Questions & Answers

Q: Will MSAT compete with cellular radio?

A: No. Cellular radio is a terrestrial system whose main market is large urban areas. MSAT's potential value lies outside the cities.