

# News

No. 1 March 1983

To begin ...

This is the first issue of **MSAT News**, a newsletter designed to keep interested people informed of the progress of MSAT's project definition phase.

It is intended to reach those in industry, business, universities and government who are now associated with communications planning. It is also for potential users of MSAT who are encouraged not only to keep informed of progress, but to contribute their ideas, information or problems to a dialogue with those who must define and design the system. Finally, **MSAT News** is for the media and for all Canadians who wish to follow progress in Canada's biggest communications project since the space age began.

**MSAT News** will be issued over the next 18 months, not according to a fixed schedule, but in relation to the flow of news of interest to readers. Much of the first issue will provide the setting; subsequently there will be concrete news of planning and design, letting of contracts, plans for post-launch communications experiments and information on related international developments.

**MSAT News** is available without charge on request to:

**MSAT News**,  
MSAT Program Manager,  
Department of Communications,  
300 Slater Street,  
Ottawa, Ontario  
K1A 0C8

Comments and suggestions will be welcomed by the editor who can be reached at the same address.

As we all know ...

MSAT, or Mobile SATellite, is a proposed telecommunications system to provide a more effective and reliable two-way radio and radio telephone service to supplement today's short-range terrestrial mobile communications systems. It would reach virtually all Canada to serve those travelling on foot, by land vehicles, airplane or ship and be able to link them with anyone served by a radio or telephone system.



The system, operating in the 806-890 MHz band, will include the capacity for data collection from platforms in the 806-890 MHz band. An experimental extremely high frequency communications package for use by National Defence is also being studied. The elements of the MSAT system are: a satellite in geostationary orbit, a partially integrated spare spacecraft on the ground, ground control facilities and a family of terminals for mobile and fixed installations.

Study of feasibility began in 1980, with a launch projected for late 1987 or early 1988. If the MSAT system is implemented, experiments and pre-operational services would be carried out for seven years.

The ultimate goal, in the 1990s, is a commercially viable communications system in which one MSAT could serve tens of thousands of small, low-cost mobile terminals such as those in airplanes or police cars. MSAT would provide reliable mobile voice and data communications to places, people and machines now unserved. Cost to the user would be comparable to mobile radio or mobile telephone rates in major cities. Its benefits would be measured not only in dollars, but in health and safety, as well as in the knitting together of a sparsely populated country.





### A message from the Minister

When historians look back at the events of the 1960s and 1970s, they will surely dwell more than most of us now do on a remarkable Canadian achievement: pioneering in space communications. While our public investment has been a logical and necessary response to our unique geography, its success has been due to the remarkable vision and proven abilities of Canadian scientists, engineers, and managers co-operating in the public and private sectors.



The MSAT system is a further logical step in the Canadian communications system: a necessary link, in this extraordinarily vast and thinly settled land, to reach those who cannot be served in a reliable or cost-effective way by today's satellites or by existing communications systems. It is also true that continued innovation in satellite communications is important to Canada's manufacturing industry in the face of fierce world competition.

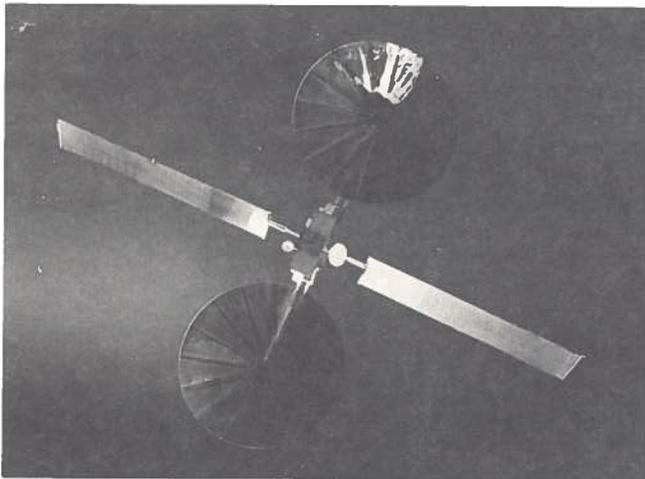
But why is the government involved?

If MSAT were an established system with known performance and a solid market, its introduction would logically be the responsibility of the private sector, with the indirect support which government gives to research and development. It is not that. It is a concept designed by Canadian engineers with a 20-year record of proven success in space. So far, it is a concept being given dimension and shape. It is a system whose commercial potential cannot be based on experience, but on market surveys projected two decades into the future. No industry in the country is willing to assume responsibility for development in such circumstances.

If MSAT were only a theoretical system whose principal value would be an advance in the world's scientific frontiers, it would probably remain on that shelf of good ideas for use in better economic times. It is far more than

### The story so far

The MSAT program schedule includes four phases before its projected launch in late 1987 or early 1988, and a post-launch communications program.



Model of MSAT

Phase A, Concept Feasibility, was undertaken between October 1980 and March 1982, at a cost of \$2.2 million. It showed the system to be technically feasible, and indicated a substantial market for commercial services.

Phase B, Project Definition, has been budgeted at \$22 million. Begun early in 1982, it involves economic studies, detailed system definition, development of technology over two years and definition of a post-launch communications program.

Phases C and D, the implementation phases covering construction and test will, if approved, commence around April 1985, with a planned launch in late 1987 or early 1988.

Cost-sharing will be an important feature of the MSAT demonstration system. The Department of Communications is seeking domestic and international partners in MSAT through talks with the carriers, future users and the U.S. National Aeronautics and Space Administration



that. Its promise of substantial commercial pay-offs later in the century justifies an investment of public funds now so that in the next decade Canada continues to benefit from opportunities to market our space communications technology and expertise abroad. We cannot afford to ignore an opportunity to build communications systems designed to serve the economy and national needs of this country. Against the ultimate costs of MSAT will have to be weighed the costs of dependence on foreign countries for advanced communications technology and services.

The Government of Canada has therefore invested in the development of MSAT to the stage where a final decision can be made — in 1984 — to pause or go the whole way. Canadian industry is deeply involved through contracts contributing to the design of the system and to continuing evaluation of its future use. Future users are joining in discussions of what it should do, so that MSAT may become both a technological and a commercial success.

I hope that **MSAT News** will contribute to this necessary exchange of information and ideas.

Francis Fox  
Minister of Communications

(NASA). As services are proven commercially viable, firms participating in post-launch experiments will lease satellite capacity, ensuring partial cost recovery.

If something approaching the projected 140,000 mobile stations are in place at the end of the century, the user benefits should substantially exceed the service costs, quite apart from the substantial benefits to carriers and to Canadian manufacturers who would supply the market.

### Phase B

On July 29, 1982, the Treasury Board approved Phase B funding of \$17 million for the Department of Communications and \$5 million for National Defence, which could be a major partner in MSAT.

Since then, the main activities have been

- preparation of detailed work plans for each work package;
- preparation of documents required for the calling of contracts;
- assembly of staff;
- formation of working groups (i.e., the carriers, federal and provincial government departments), to establish user requirements;
- industry briefings;
- discussions with NASA;
- interdepartmental co-ordination and planning;
- in-house work on system definition and technology development.

### Interdepartmental co-ordination

The wide range of potential uses for mobile communications is reflected in the number of federal departments with an active interest with MSAT. The Department of Communications has established a management body, called the MSAT Planning/Implementation Committee, with representation from National Defence, Supply and Services, Energy, Mines and Resources, Transport, Fisheries and Oceans, Environment, Emergency Planning, Solicitor General, Indian and Northern Affairs, Health and Welfare, Treasury Board, Science and Technology, Employment and Immigration, and Industry, Trade and Commerce as well as Telesat. It generally meets every two months.

### Industry briefing

On September 9 and 10, 1982, an intensive briefing was presented to 230 representatives of industry, universities and government. It covered the whole of the MSAT program, including a review of Phase A and plans for Phase B.

### “Petition for Rulemaking”

In November, NASA filed with the U.S. Federal Communications Commission (FCC), a “Petition for Rulemaking” whose purpose is to ensure allocations at 821-825 MHz and 866-870 MHz, both currently in reserve, to the Mobile Satellite Service, with additional reservations until 1990 to maintain sufficient spectrum for the commercial phase. The petition also requests allocation of spectrum from 35 MHz to 80 MHz in each direction at S-Band or Ku-Band for access to and from MSAT by fixed satellite earth stations to be interconnected to terrestrial communications systems.

The petition is required because the FCC in 1979 rejected a NASA proposal that the reserve

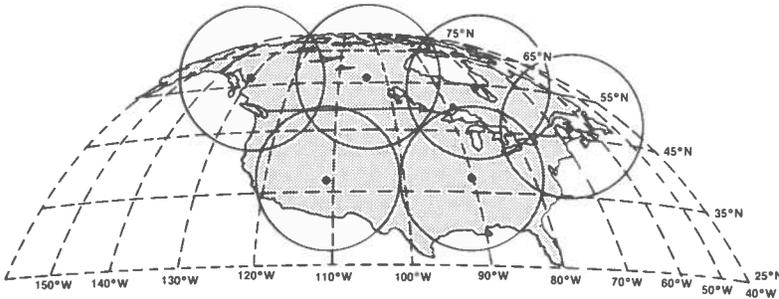
portion of the 800 MHz band be "regrouped" in anticipation of the Mobile Satellite System. NASA's current proposal takes the 800 MHz reserve band as is, to avoid any problem in implementing terrestrial services.

In its request, NASA draws particular attention to the urgency attached by Canada's Department of Communications to favorable action.

### Signing of Arrangement with NASA

Preparations are complete for the signature of the Arrangement under which the Department of Communications and NASA plan to cooperate on Phase B of the MSAT program. While it is intended that collaboration would continue if Canada and the United States approve the implementation stages of MSAT, the Arrangement does not commit either party to proceed beyond Phase B. However, if MSAT is implemented, it is expected that the United States would assume responsibility for the launch vehicle and upper stage of the spacecraft; while Canada would design a spacecraft covering the United States and Canada with sufficient capability to meet U.S. experimental needs.

### MSAT 800 MHz coverage



Planned MSAT antenna coverage for mobile telephone and mobile radio service, including NASA participation.

### Advance publication of information

The Department of Communications has formally sent to the International Frequency Registration Board of the International Telecommunication Union, an "Advance Publication of Information on the MSAT Satellite Network". It provides a general description of the telemetry, tracking, control and the mobile satellite functions implementing the planned stages in securing the necessary frequencies.

### Contracts

Phase B is being conducted through about 40 contracts to be awarded to Canadian industry.

- Woods Gordon has recently been awarded a \$250,000 contract for a market definition study and user benefit study.
- Telesat Canada will carry out a study of the commercial viability of a follow-on system, under a recently awarded \$700,000 contract.
- Negotiations for the SPAR spacecraft definition contract are continuing, with hope of early resolution.
- On January 28 a Bidder's Conference was held for those interested in the study of the impact of MSAT on the manufacturing industry. Six proposals were received in February.

### Overseas interest

Aerospatiale (France) visited Ottawa on January 20 to discuss MSAT requirements for the dual 9-m antennas (reflectors and feeds).

### Data collection platform

In January, the User's Committee recommended data collection platform service on MSAT on the 800 MHz band, rather than on the 400 MHz band now used by foreign services. This was later confirmed by the Interdepartmental Planning/Implementation Committee.

### Documentation

The Department of Communications has MSAT reports and publications available. In line with government economies, the bulkier documents have not been printed for general distribution, but are available on short-term loan.

- MSAT Fact Sheet: a 9-page introduction to MSAT, September 1982. Available free of charge.
- The Canadian Mobile Satellite Program, by P.M. Boudreau, R.W. Breithaupt and J.L. McNally: a description by three of the senior managers concerned, November 1982. Available free of charge.
- MSAT Phase B Project Plan: 104 pages, March 1982. Available on loan.

Enquiries about publications may be addressed to:

**Information Services,  
Department of Communications  
300 Slater Street,  
Ottawa, K1A 0C8  
(613) 995-8185**