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MSAT NEWS

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New service providers join MSAT team

Northwestel Inc.

The first telephone company to join TMI Communications' stable of MSAT service providers is Northwestel Inc.

TMI Communications announced it had reached an agreement with Northwestel on December 21, 1994. Northwestel hopes to generate interest in MSAT services among northerners who do not have access to regular telephone service or who require communications at temporarily occupied sites, such as seasonal or exploration camps.

With headquarters in Whitehorse, Yukon, Northwestel provides telecommunications service to approximately 100 000 people in the Yukon, Northwest Territories and northern British Columbia. "The possibilities for the use of MSAT communications in the north are limitless," says Bill Dunbar, Northwestel's President and CEO.

For more information, please contact:

Nanci Corrigan, Northwestel Inc. — tel.: (403) 668-5448

Infosat Telecommunications

The latest company to join TMI's service provider network is no stranger to satellite communications.

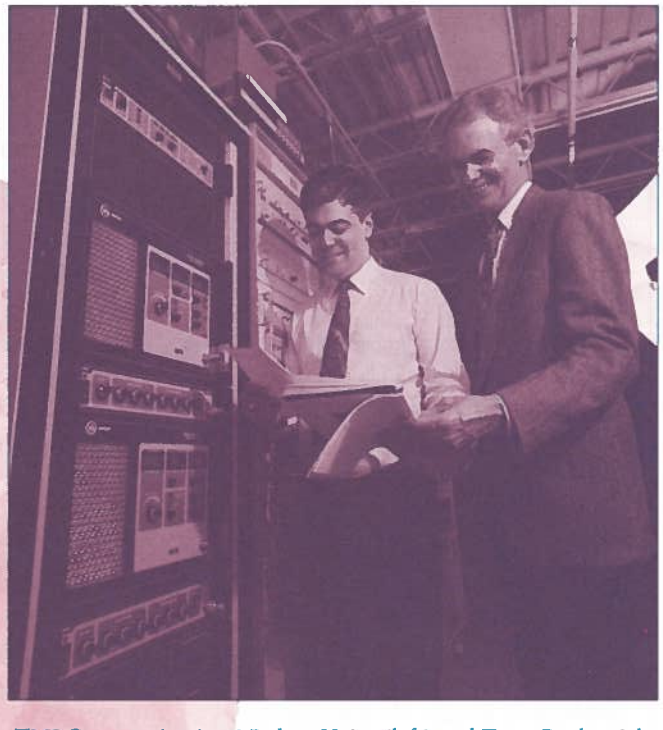
Infosat Telecommunications, a division of NAV Communications Inc., has more than seven years' experience providing point-to-point and broadcast satellite communications to northern communities and resource-based industries such as mining, oil and gas, forestry and fishing. The firm designs, engineers, integrates and installs communications systems for which satellite communications is a key component.

The company believes that MSAT will complement its current remote satellite communications network by providing a reliable option for users requiring mobile communications, says General Manager Brian Nixon. The agreement with TMI Communications was announced February 8, 1995.

Infosat's commitment and experience make it uniquely qualified to provide MSAT services, says John Farrell, TMI's President and CEO. Infosat has offices in Vancouver, Fort St. John, B.C., Calgary and Edmonton.

For more information, please contact:

Brian Nixon, Infosat Telecommunications — tel.: (604) 420-5598 ●



TMI Communications' Robert Vaive (left) and Terry Brukewich discuss the hardware that will amplify the signals sent to the large dish antenna that has been installed to connect the satellite to the MSAT Network™ ground segment.

New TMI brochure

TMI Communications has developed a new brochure to publicize MSAT services.

Some *MSAT News* readers will receive a copy along with this issue of the newsletter. Those who were not mailed a copy can get one by calling TMI at 1-800-216-MSAT. ●

Introducing GMSS

The upcoming launch of TMI Communications' Mobile Communication Satellite (MSAT) is the last major event preceding the introduction, by Government Telecommunications and Informatics Services (GTIS), of the new Government Mobile Satellite Service (GMSS). Official introduction of this new service is expected to take place in the last quarter of 1995.

Since its beginning as a pilot program in the early 1970s, MSAT has been recognized as the solution to providing reliable communications beyond the coverage of the conventional telecommunications infrastructure.

As part of the strategy for the introduction of this new service, GTIS has developed a promotional program designed to provide potential users with an opportunity to "test-drive" the new service for a period of 90 days, without risk or investment.

"The sooner GTIS can get departments to start using the service, the sooner the federal government can benefit from the capabilities of the system and achieve the considerable savings potential of GMSS," explains Al Kingan, Product Director, GTIS Satellite Services.

GMSS is designed to provide a much-needed link between the remote areas of North America and the urban centres.

GTIS provides state-of-the-art products and services to federal departments, agencies and Crown corporations.

For more information about GMSS, contact your local GTIS account manager, or call (613) 990-4444.

Preparing to deliver the service

GTIS is planning two test periods for GMSS — an engineering trial and a market trial.

These trials will be distinct from the alpha and beta trials being conducted by TMI, explains Ross Owens, a contract specialist with GTIS. "The trials will allow GTIS and its subcontractors to work out how best to offer the services and will allow clients to get a handle on what GMSS is, and what it can do for them."

The engineering trial will take place after the launch, but before full commercial service is available. GTIS will have selected a subcontractor or subcontractors to provide GMSS services by then, and this trial will allow them to ensure all necessary processes and services are in place. This will be done with the assistance of a number of government clients who sign on early for the service.

When full commercial service becomes available, the market trials of GMSS will begin. During this stage, GTIS will run a series of programs designed to introduce users to the service and to show them the advantages of MSAT.

GTIS staff gearing up to deliver GMSS

As reported in the last issue of *MSAT News*, GTIS is preparing a major marketing drive to introduce government managers to MSAT services.

Local GTIS account managers will play a major role in this strategy. "We want to have people on the front lines who can get the information out," explains Keith Fagan of GTIS. "To do that, we are preparing materials for our account managers so they can, in turn, provide their customers with all the information they need."

The support materials will be complemented by a team of specialists from GTIS and from subcontractors. "When a client has unique requirements, the account managers will be able to call on this team to back them up," explains Fagan. As user needs become better defined, GTIS will phase out this team. ●

MSAT services to be phased in

MSAT services will be introduced in several phases, beginning in the final quarter of 1995.

This approach will allow TMI Communications to adequately test each service, explains Terry Brukewich, Public Sector Sales Manager at TMI. "You cannot do that if you introduce everything at once."

"We know this is the way to go because of our experience with the pre-MSAT trials," says Brukewich. These trials, which ended in 1993, were conducted over a two-year period using capacity leased on another communications satellite.

MSAT services will be phased in as follows:

- MSAT phone, which will provide phone service in remote areas
- mobile phone service for use in vehicles
- dispatch radio for fleet operators
- packet data for applications such as SCADA
- mobile packet data, which will allow users such as police forces to install a computer in a vehicle that is linked to the office via MSAT.

TMI expects the full service to be available in 1996.

For more information, please contact:

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New antennas for MSAT spacecraft

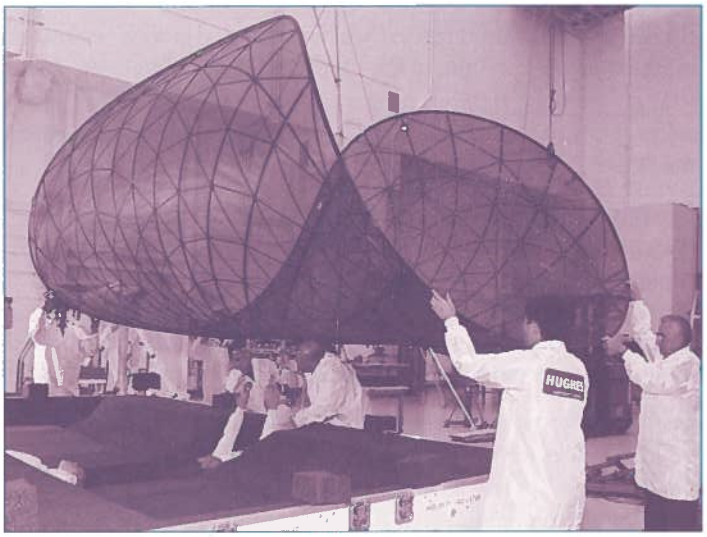
MSAT will be the first communications satellite to use the new "Springback" satellite antenna design developed by the Hughes Space and Communications Company of California.

Although both of MSAT's two L-band antennas are larger than the average living room, at 6.7 by 4.9 m, they weigh less than 21 kg each. For launching, the two antennas can be collapsed together into a 4.9 m high cone, approximately 1.5 m wide at the top and 3 m wide at the bottom. When in this folded position, the two antennas make use of normally unused space in the narrow nose cone section of the *Ariane 4* rocket that will carry MSAT into orbit.

Once the satellite is in orbit, the antennas will "spring back" into their correct configuration to operate in the L-band frequency range that the MSAT system employs to communicate with individual mobile terminals or fixed terminals in remote sites.

There are no mechanical parts in the antenna to wear out, says Emery Wilson of the Hughes Space and Communications Company. "The reflector is assembled onto a massive graphite mandrel, or mould, and the antenna is then baked to bond the pieces together," he explains.

The two antennas were shipped to Ottawa last fall to undergo environmental testing and then were attached to the spacecraft for testing (see "Trial by (everything but) fire," p. 4).



These engineers can easily lift the 21 kg "Springback" antenna. Two of these antennas, developed by the Hughes Space and Communications Company, will be used to communicate between the MSAT spacecraft and individual system users.

For more information, please contact:

Emery Wilson, Hughes Space and Communications Company
Tel.: (310) 364-6339; Fax: (310) 364-6397 ●

Progress on several fronts

As *MSAT News* goes to press there is some late-breaking news on the progress of the MSAT project.

- Acoustic testing was completed on both the American and Canadian spacecraft early in the year (see "Trial by (everything but) fire," p. 4, for more details).
- The American satellite was slated for launch at the end of March.
- Some switching equipment for use with the Canadian ground segment of the MSAT Network has been received for installation by TMI Communications after passing tests conducted by the Westinghouse Electric Corporation in Baltimore.
- Westinghouse has also successfully completed a 200-hour test of the complete American ground segment equipment, which is similar to that being assembled for the Canadian operation. This test, conducted in early February, consisted of a continuous run during which "call generators" created a load of six calls per second for the system to set up, terminate and maintain billing records.

Program for IMSC '95 almost finalized

Preparations for the fourth International Mobile Satellite Conference (IMSC '95) and Exhibition are now in high gear. The conference, with the theme "Mobile SATCOM Comes of Age," will be held in Ottawa June 6-8, 1995.

More than 100 engineers, researchers and business professionals from 13 countries are scheduled to make presentations about the latest research and activities in mobile satellite communications. In addition, four panel discussions are planned on the themes of multimedia, user requirements, geopolitics and developing countries, and recent developments in mobile satellite systems.

In the tradition of preceding conferences, the IMSC '95 co-sponsors (the Communications Research Centre and the Jet Propulsion Laboratory) will be encouraging productive exchanges between developers, producers and users of mobile satellite communications technology in the exhibit hall. Confirmed exhibitors include CAL Corporation, Calian/SED, the Canadian Marconi Company, the Communications Research Centre, Infomagnetics Technologies Corporation, the Jet Propulsion Laboratory, Martin Marietta, NewEast Wireless Technologies, SPAR Aerospace, SSE Technologies, TMI Communications, TRW, and Westinghouse Electric Corporation.

In addition, Canada's Industry Minister, John Manley, has the IMSC '95 banquet marked on his calendar. The organizers have invited him to be the after-dinner speaker.

An Advance Program with information on the papers to be presented and on exhibitors planning to attend the conference is available. For a copy, or to register for IMSC '95, please contact:

Lynell Wight
IMSC '95 Co-ordinating Committee

Tel: (613) 990-0133
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E-mail (Internet): imsc@crc.doc.ca ●

Trial by (everything but) fire

Regular *MSAT News* readers will have noticed several references in recent issues to testing of the Canadian MSAT spacecraft. These tests are part of a rigorous program to make sure MSAT can operate properly in the harsh environment of space and can withstand the stresses it will be subjected to during a launch.

The tests are similar to those every spacecraft undergoes before launching, says Sandra Pacey of SPAR Aerospace, which built the communications payload for both the Canadian and American satellites. These tests are also not the first performed on the satellite components. They were all extensively tested before they were shipped to the David Florida Laboratory for assembly.

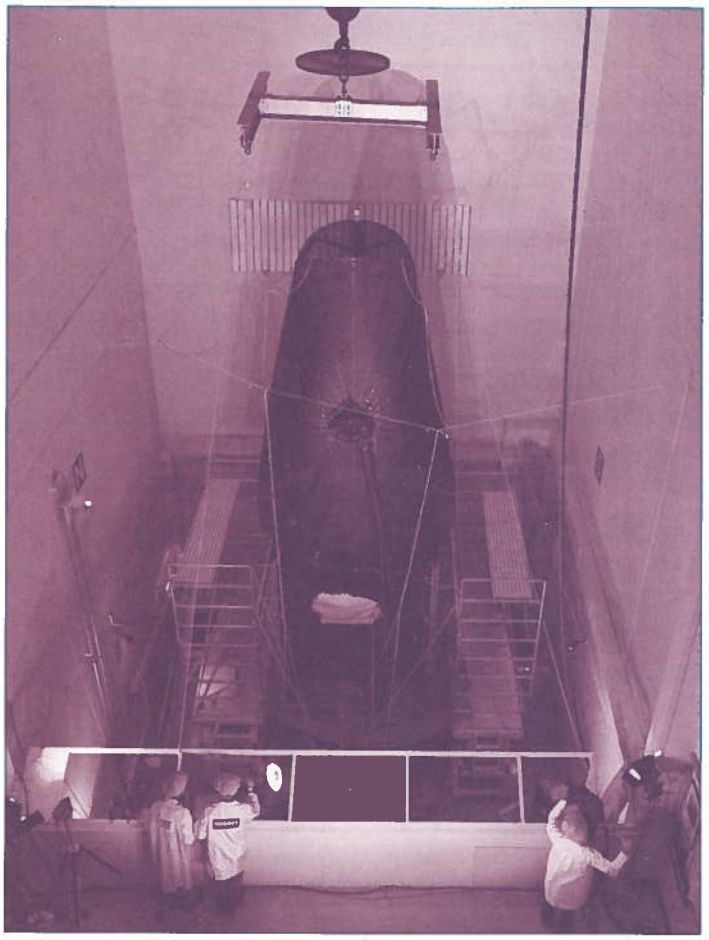
The two largest components of the satellite are the bus module, which includes devices such as thrusters and the batteries and electronics to operate them, and the payload module, which includes the communications hardware that will operate with the MSAT Network.

Once assembled, the bus and payload are tested to verify that they work correctly as a system, and the various appendages, such as reflectors and solar arrays, are attached to the main body of the satellite.

As part of the testing, various commands are then sent through the spacecraft just as if it was in orbit. Following this initial systems test, the spacecraft is subjected to a battery of durability tests including

- simulating space conditions in a thermal vacuum chamber including cycling to extreme temperature variations
- subjecting the spacecraft to vibration tests to ensure that it will not resonate in a way that could cause damage during the launch
- performing acoustic tests to confirm that the sound vibrations from the *Ariane 4* rocket do not produce similar problems
- complete testing of the deployment of mechanisms such as the solar panels and the Springback antenna.

Finally, the appendages are removed and subjected to separate tests of their own while a second systems test is run on the spacecraft to verify performance consistency after the durability tests. The appendages are then put back on the spacecraft and it is readied for transport to the launch site. ●



The Canadian MSAT antenna was placed on a vibration table at the Canadian Space Agency's David Florida Laboratory to ensure it could withstand the stresses that will be placed on it during launch. In this photo the "Springback" antenna is shown in the folded position for storage inside the narrow nose cone section of the Ariane 4 *rocket.*

Photos

The photos in issue #12 (Fall 1994) were used courtesy of Janice Lang/Communications Research Centre (page 1), Westinghouse (page 2), Chris Bennett Communications (page 3), and TMI Communications (page 4).

The photos in this issue are used courtesy of John Brebner and Janice Lang/Communications Research Centre (page 1, 4) and Hughes Space and Communications Company (page 3).

MSAT News

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