

# draws on Canadian expertise

two years. However, a Canadian astronaut will also be needed in the early stages of the space station construction when the Mobile Servicing System is used for the first time.

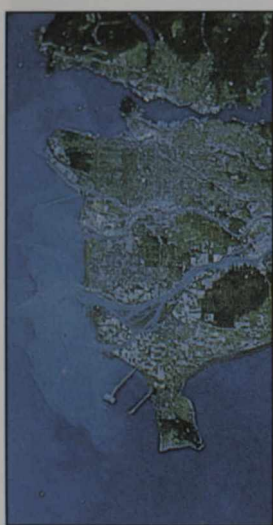
There are already six astronauts – five men and one woman – who are ready for take-off. Originally chosen to fly on the space shuttle – a project which was grounded after the Challenger accident in 1986 – they are now closely involved in the various technology committees for the MSS.

The space station will take three years to

assemble and it will continue to operate for 30 years. Canada's investment therefore represents a long-term commitment to space technology and research.

However, it would be misleading to regard the country's interest as solely extra-terrestrial. According to Science Minister Robert de Cotret, 'Designing and building the MSS will enable Canada's space industry to develop numerous advanced technologies which will be applied and adapted to traditional earth-bound activities.' 🍁

## Canada pioneers space systems with a peaceful intent



Vancouver as seen from 50,000 feet by satellite. Remote sensing is being used to manage the country's resources and monitor environmental changes.

Canada's involvement with space reaches back more than 25 years. It began in 1962 with the launching of the satellite Alouette I, an event which distinguished Canada as the third nation in the world – after the Soviet Union and the US – to have a satellite in orbit.

Canada was quick to recognise the advantages of space technology to meet the country's social and economic needs. One particular problem for a country whose population is dispersed over such a large area has been providing effective communications. The launch of Anik A1 in 1972 provided a solution.

Anik A1 was the world's first telecommunications satellite in geo-stationary orbit, moving in such a way that it remained in a fixed position above the earth. For the first time, it became possible to provide communications links with remote communities which could not be reached by terrestrial systems.

Further advances were made by the Hermes experimental satellite in 1976. They brought down the cost of satellite transmissions and increased their accessibility, and included the establishment of a network of small ground stations and of satellite broadcasting to cable networks, as well as the introduction of home satellite dishes capable of receiving direct satellite transmissions.

### Space technology solves terrestrial problems

But Canada's space pioneering will not stop there. 1990 will see the launch of two Anik E satellites – the largest and most powerful domestic communications satellite ever planned. And in 1992, MSAT – a mobile communications satellite – will be put into orbit to provide a network to terminals on vehicles operating on land, at sea or in the air.

In other areas, Canadian satellites are already playing an important role in education. One third of the country's tertiary institutions use teleconferencing in distance education programmes, while educational satellite networks such as ACCESS Alberta and British Columbia's Knowledge Network have pioneered alternatives to the traditional classroom.

Satellites are also playing a key role in extending health-care services to remote regions. By means of satellite transmissions, doctors operating on patients in isolated areas are able to consult with urban specialists and relay medical

data for analysis by sophisticated diagnostic equipment.

A further application of Canadian space technology has been in satellite remote sensing – particularly in agricultural areas where it can monitor changing crop conditions, detect disease and estimate potential yields. Canada has also used this technology in fields as diverse as forestry, geological mapping and exploration, water resource management and weather forecasting.

Remote sensing is, in fact, the fastest-growing sector of the Canadian space industry. More than 30 firms are involved in the design and manufacture of this equipment, making Canada a world leader.

### Space companies reach for the stars

Canada's commitment to space research has resulted in a thriving space industry that is 90 per cent Canadian owned and has an annual growth rate of between 10 and 20 per cent. Companies like Spar, SED Systems, Canadian Astronautics, and Fleet Industries – to name but a few – have a world-wide reputation, and as a group export more than 70 per cent of their production.

The largest of the 100-or-so companies that make up the Canadian space industry is Spar, which in addition to making remote manipulator systems for the space shuttle, has designed and manufactured all 14 of the Canadian satellites

The largest segment of the Canadian space industry is devoted to satellite earth stations and related systems.

