

2001: *A Space Station*

Science fiction will soon be fact. The commonly envisaged space station of literature and films took a key step toward becoming reality with the 1987 Canada-U.S. agreement to build a permanently manned, orbiting space station by the end of the century.

The station, orbiting 450 km above the earth, will consist of several habitable crew modules, mounting structures for earth-observation and astronomical instruments, a shuttle docking port and, eventually, free-flying unmanned platforms and commercial laboratories. The United States is building the main structure and two habitation modules and is

negotiating with Europe and Japan to provide two more modules and other facilities. With international participation, the project is expected to cost at least \$18 to \$20 billion (US) over the station's 30-year lifetime.

The space station agreement took nearly four years to negotiate. Under its terms Canada will provide a robotic manipulator system, called the mobile servicing system (MSS), which will be used by crew working inside or outside the station. In return, Canada will share in the management and operation of the station, have access to the station's facilities, and have the right to put Canadian crew members on board.

However, the agreement also allows Canada to withdraw from the project, with reimbursement for its investment in the MSS, if the United States decides to use the station for military purposes that are unacceptable to Canada. This ensures the continuity of the Canadian tradition of peaceful involvement in space.

The Mobile Servicing System

The mobile servicing system will play a major role in the construction of the space station and will be among the first station components launched by the American space shuttle in the mid-1990s.

After completion of the station's construction phase, the MSS will haul cargo and do maintenance and repair work. It may also be used to dock the shuttle.

The challenge of designing and building the complex mobile servicing system is being met by Spar Aerospace Ltd., the Canadian company that built the successful Canadarm. The MSS program will enhance Canada's existing expertise in space robotics and develop advanced computer-control technologies. Spar Aerospace

Canada will participate in the building and operation of an international space station.

