

originating from industry, government and universities which benefit from human intervention in space.

Estimated funding for the Astronaut Program over five years to FY 1990/91 is \$15 million. Over the 15-year period to FY 2000/01, estimated costs will be \$55 million.

F. Space Science

The definition of space science is necessarily very broad and includes study of the space environment, the solar system, and the physical and biological processes which occur in space, including those associated with manned space flights. One way of defining space science is to divide the subject into three categories: (1) science *on* space, essentially studies of the space environment; (2) science *in* space, including experiments, such as those planned for Space Station, in life sciences and materials processing in a microgravity environment; and (3) science *from* space, which can include space observations of the Earth's surface and atmosphere, and of astronomical phenomena. (Canada's Space Science Program excludes research in remote sensing and in communications which are organized and funded as separate activities.)

The Canadian Space Plan which was announced in May 1986 included a Space Science Program as a major component. Specifically, four areas of space science were chosen: space physics, upper atmospheric research, microgravity sciences, and space astronomy. Canadian activity in space science has traditionally been concentrated on space physics and upper atmospheric research, and our researchers have achieved international recognition in these disciplines. Canada's major achievements in space science occurred in the 1960s and early 1970s, particularly with the four major scientific satellites in the Alouette-ISIS programs, and also with the sub-orbital rocket experiments launched from Fort Churchill, Manitoba.

The Space Science Program, as articulated by the National Research Council, has the following objectives:

First is to ensure Canada maintains a position of excellence in a world-wide context in the exploration of space.

Second, particularly through the program activities with NRC, is to provide opportunities for Canadian scientists to participate in both national and international space science missions.

Third is to provide the major facilities and instruments required for Canadian scientists to perform space science experiments, to train young scientists and engineers to meet the future needs of the program and to strengthen ties and cooperation between industry and universities.⁵

The May 1986 announcement stated that additional funding would be made available for space science: \$20 million over five years to FY 1990/91, and \$70 million over 15 years to FY 2000/01.

⁽⁵⁾ National Research Council, Space Division, *Minutes of Proceedings and Evidence of the Standing Committee on Research, Science and Technology*, Issue No. 18, March 12, 1987, p. 18:7. (Further references to Proceedings and Evidence will only be identified by issue number and date).