REPORT ON PLANS AND PRIORITIES 2002-2003
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5.1 Summary of Capital Spending by Program and Business Line

	Forecast Spending 2001-2002 ($ in millions)	**Planned Spending 2002-2003 ($ in millions)**	Planned Spending 2003-2004 ($ in millions)	Planned Spending 2004-2005 ($ in millions)
Business Line				
Space Knowledge, Applications and Industry Development	167.8	**168.4**	144.0	136
Total	167.8	**168.4**	144.0	136

Nota: Due to rounding, figures may not add up to totals shown.

5.2 Details of Major Capital Project Spending

	Current Estimated Total Cost ($ in millions)	Forecast Spending to March 31, 2002 ($ in millions)	**Planned Spending 2002-2003** ($ in millions)	Planned Spending 2003-2004 ($ in millions)	Planned Spending 2004-2005 ($ in millions)	Future Year Spending Requirement ($ in millions)
Business Line						
Space Knowledge, Applications and Industry Development						
(O-Q) Canadian Space Station Program	1396.3	1376.0	**18.6**	1.0	0.7	0.0
(Q) RADARSAT-1 (MCP)	662.2	630.8	**12.9**	8.3	10.1	0.0
(BC-Q) RADARSAT-2 (MCP)	414.8	307.1	**56.5**	51.1	0.0	0.0
(O) MOST (EPA)	8.7	6.4	**2.0**	0.4	0.0	0.0
(O) Insect Habitat (EPA)	10.4	5.9	**3.8**	0.7	0.0	0.0
(O) Cloudsat (EPA)	13.9	8.2	**3.5**	2.0	0.2	0.0
(Q-M) SciSat-1 (EPA)	50.3	39.0	**9.3**	1.2	0.8	0.0
MIMBU (EPA)	6.3	1.5	**3.1**	1.7	0.0	0.0
TOTAL	2562.8	2374.9	**109.8**	66.3	11.8	0.0

Nota: Due to rounding, figures may not add up to totals shown.

Province where the capital project will be carried out
O = Ontario
Q = Québec
BC = British Columbia
M = Manitoba

Class of Project
MCP = Major Crown Project
EPA = Effective Project Approval

5.3 Status Report on Major Crown Projects

5.3.1 Canadian Space Station Program

Description

The International Space Station (ISS) program, the largest civilian science and technology program to ever be undertaken by the G-7 countries, was initially motivated by political factors. The original overriding purpose of the ISS was to promote peace, prosperity, and the scientific utilization of space. The social and economic benefits have become important during the course of the development of the ISS.

In January 1984, the President of the United States directed NASA to develop and place into orbit a permanently manned Space Station and invited the allies of the United States (U.S.) to participate in its development and use. Canada accepted the U.S.'s invitation to join the multilateral program to build and use the ISS. In September 1988, Canada signed a formal agreement with U.S., member states of ESA and Japan to participate in the ISS program. As part of a major political initiative to bring their country into the Western world economy, Russia also joined the program in 1995.

Canada's contribution to the program is the Station's robotic equipment infrastructure, the Mobile Servicing System (MSS). The MSS is used for assembly and maintenance and includes the design and construction of the following:

- Space Station Remote Manipulator System (SSRMS) mounted on a Mobile Base System (MBS) and designed to handle large loads on-board the Station;
- Special Purpose Dexterous Manipulator (SPDM), a second robot designed to take care of more delicate works; and,
- Ground infrastructure to support MSS on-orbit commissioning, MSS operations, and MSS training for astronauts and ground personnel.

Canada is also responsible for MSS Operations which includes the fulfilment of maintenance responsibilities such as: sustaining engineering (e.g., software upgrade), integrated logistics (e.g. spares for critical components) and MSS repair and overhaul. Canada gains the right to use the ISS facilities for scientific and technological research by contributing the MSS. The CSA is also training astronauts and cosmonauts in the operation of the MSS.

The Canadian Space Station Program (CSSP) received Effective Project Approval in February of 1990. The program defines all the activities necessary to discharge Canada's obligations, including completion of the on-orbit testing and commissioning of the MSS and its operations. In addition, it also includes the Strategic Technologies for Automation and Robotics (STEAR) program to support industry-led projects in developing dual-use automation and robotic technology that can be applied both on Earth and in space, as well as transferring Space Station technology to many different industries. From its inception to March 2002, the total estimated cost of the CSSP amounts to $1.4 billion.

Leading and Participating Departments and Agencies

Lead Government Agency: Canadian Space Agency
Contracting Authority: Public Works and Government Services Canada

Prime and Major Sub-Contractors

Prime Contractor: - MDA Space and Advanced Robotics (MDR)	 Brampton, Ontario
Major Sub-contractors: - EMS Technologies - MacDonald Dettwiler & Associates (MDA) - SED Systems - IMP - CAE - Calian	 - St.Anne de Bellevue, Québec Ottawa, Ontario - Richmond, British Columbia - Saskatoon, Saskatchewan - Halifax, Nova Scotia - St. Laurent, Québec - Kanata, Ontario

Major Milestones

The following table outlines the international milestones driving the CSSP:

Major Milestones	**Dates**
Launch of the first Space Station element	November 1998
Delivery of the SSRMS to NASA	May 1999
Delivery of the MBS to NASA	August 2000
First permanent international human presence on ISS (a crew of three persons)	November 2000
Launch of the first major MSS element (SSRMS), Canadarm2	April 2001
Launch of the second MSS element (MBS)	May 2002
Launch of the third MSS element (SPDM)	October 2003*
Permanent international human presence capability (seven persons)	January 2006

* Recent changes in the Assembly Sequence of the ISS due to budget pressures at NASA may move this to January 2006.

Progress Report and Explanations of Variances

The CSSP is a high risk endeavour. The long-term scope and international dimension of the ISS program limits the ability of any one country to control scheduling, design and cost changes fully. Moreover, the uniqueness of the space hardware being developed necessitates very stringent quality control requirements within a rapidly developing technology.

Considering this situation, it is not surprising that the estimated cost of the Canadian Space Station Major Crown Project development has suffered a 5% increase from $1191.7 million in 1990 to $1249.7 million today (plus $146.6 million for costs of phases prior to 1991, the estimated cost for completing the major capital portion of the CSSP is $1396.3 million). The CSSP will not face major cost increases from now on since the most risky phase, i.e. space hardware manufacturing and testing, is completed with respect to the SSRMS/MBS and is nearing completion for the SPDM. Moreover, the CSA's new Risk Management Framework facilitates proper risk evaluation and mitigation processes, including the timely identification of risks affecting projects, the development of strategies either to reduce risks significantly or to avoid them, and the allocation of funds to cover risks.

The CSA has initiated the development of an ISS Commercialisation policy to facilitate the utilization of the ISS research capabilities by industry.

The SSRMS was successfully completed and delivered to the Kennedy Space Center (KSC) in May 1999 and was successfully launched and installed on the International Space Station in April 2001. The MBS was delivered to KSC in August 2000 and its launch is scheduled for May 2002. The SPDM manufacturing is complete and a formal Acceptance Review was completed in November 2001. It is anticipated that the CSA will take ownership of the SPDM from MD Robotics in April 2002. The Artificial Vision Unit was delivered to KSC in December 1998.

Recent budget pressures on NASA from the U.S. government have brought some uncertainties to the ISS program. A review of the U.S. contribution has been completed and was presented to the International Partners during the fall of 2001. The U.S. has decided to focus on an interim configuration known as U.S. Core Complete that will support only three permanent crew members. Achievement of this configuration is expected in February of 2004. The U.S. has committed to preparing a plan to achieve the full seven person Assembly complete configuration but with no commitment to fund certain U.S. elements necessary to achieve that configuration. The CSA has appealed this decision and it is fully expected that the U.S. will continue towards the original seven person ISS capability but on a delayed schedule. This situation will force all partners to delay Astronaut flights to the ISS and utilization of the ISS research capability. It is also expected that the launch of the SPDM will be delayed.

Industrial Benefits

The mission of Canada's space program is to develop and apply knowledge for Canadians and humanity. Companies are already adapting ISS technology to capture opportunities on the ground. The following tables summarize CSSP generated economic and regional development benefits. This has led to significant benefits in terms of building an industrial infrastructure of regional firms with capabilities in the high-tech sector and with knowledge of space requirements to complement their experience with competitive procurement.

Economic Development Factors	**CSSP Benefits**
R&D Capability and Knowledge	Development of MSS enhanced R&D capability of primary firms in aerospace sector. High visibility of ISS promoted Canadian capabilities and products.
Human Capital	CSSP increased technical and management skills. STEAR enhanced focus on commercialisation and improved commercialisation strategy capabilities.
Cluster Development	New links among firms strengthens information flows in sector, a key factor in developing new technology innovation. STEAR helped create nationally competitive regional companies, partnerships and alliances (over 150 companies involved primarily SMEs).
Competitiveness	Canadian firms were given a competitive advantage in world markets by meeting high quality manufacturing requirements. Canadian competitive advantages were developed in the area of robotics. Productivity has improved in a number of sectors with application of STEAR technologies, including medical testing mining, pipelines, the nuclear industry, animation and fish processing.
Growth	Growth of sector through sponsored, spin-off activity and increased exports.
Economic Diversification	New markets for CSSP related technologies.
Employment	Knowledge-based employment increased from sponsored and spin-off activities. STEAR helped companies sustain employment and, thereby, enhanced the probability of long-term technical and commercial success.

As of March 31, 2001, the Canadian Space Program has awarded $2.852 billion worth of contracts, of which over $1.139 million was attributable to the CSSP. The regional distribution profile is shown in the table below.

The current regional distribution of space contracts closely meets targets, with the exception of Atlantic Canada where significant growth has been achieved, where space capabilities were virtually absent when targets were established. Indeed, the cumulative total of space contracts awarded in Atlantic Canada between 1988 and 1992 was 0.2% of the Canadian total, compared to 3.5% in 2001.

Regional Distribution of Space Contracts ($ in millions)
(January 1988 to March 2001)

Programs	**Total Canada**	**British Columbia**	**Prairie Provinces**	**Ontario**	**Québec**	**Atlantic Provinces**
MSS Development and Operations	$1139	$57 5%	$67 5.9%	$674 59.2%	$305 26.7%	$36 3.2%
STEAR	$54	$11 20.9%	$3 5.6%	$19 35.6%	$16 29.3%	$5 8.6%
Microgravity Science	$62	$4.5 7.3%	$7.7 12.4%	$27 43.6%	$15 24.4%	$7.6 12.3%
Canadian Space Program	$2,852	$289 10.1%	$266 9.3%	$1280 44.9%	$918 32.2%	$100 3.5%
Targets		**10%**	**10%**	**35%**	**35%**	**10%**

5.3.2 RADARSAT-1

Description

RADARSAT-1, Canada's first Earth Observation satellite, is the only fully operational civilian remote sensing satellite that carries Synthetic Aperture Radar (SAR). This technology, contrary to optical sensor satellites, has the capacity to image day and night, in all weather conditions regardless of cloud cover, smoke, haze and darkness. Launched in November 1995, RADARSAT-1 was intended to operate for five years with an impressive 96% operational reliability, to supply timely, high-quality data consistently to RADARSAT International (RSI), a wholly owned subsidiary of MacDonald Dettwiller and Associates (MDA) and other partners (federal and provincial government departments, NASA and the U.S. National Oceanic and Atmospheric Administration). RADARSAT-1 is now in its' seventh year of operation.

RADARSAT-1 acquires high quality images of the Earth and covers most of Canada every 72 hours and the Arctic every 24 hours. It has proven itself in gathering the data needed for more efficient resource management (e.g., support to fishing, shipping, oil and gas exploration, offshore drilling, mapping) as well as ice, ocean and environmental monitoring, disaster management and Arctic and offshore surveillance.

Leading and Participating Departments and Agencies

Sponsoring Agency:	Canadian Space Agency
Contracting Authority:	Public Works and Government Services Canada
Participating Departments:	Environment Canada Natural Resources Canada (Canada Centre for Remote Sensing)

Prime and Major Sub-Contractors

Prime Contractor: - EMS Technologies	St. Anne de Bellevue, Québec
Major Sub-contractors: - MacDonald Dettwiler & Associates (MDA) - SED Systems - EMS Technologies - COM DEV - Lockheed Martin	 - Richmond, British Columbia - Saskatoon, Saskatchewan - Ottawa, Ontario - Cambridge, Ontario - Longueuil, Québec
- Ball Aerospace	- Boulder, Colorado, U.S.
- RADARSAT International (RSI)	- Richmond, British Columbia

Major Milestones

Major milestones of the RADARSAT-1 Major Crown Project are now complete.

Major Milestones	**Date**
- Preliminary studies	Complete
- Feasibility and concept definition	Complete
- Systems requirement and preliminary design	Complete
- Development and testing up to qualification test review	Complete
- Manufacture of the prototype flight sub-systems up to acceptance testing of the sub-systems	Complete

- Assembly and integration of the sub-systems up to flight readiness review, plus post-launch and commissioning activities up to system acceptance	Complete
- First Antarctica mission - Second Antarctica Mission - Original Mission Life of Five years	Complete Complete Complete
- Satellite Operations	April 1996 March 2003

Progress Report and Explanation of Variances

Effective Program Approval was obtained for RADARSAT-1 in March 1991, with launch in November 1995 and commencement of operations in April 1996. The initial system included receiving stations for Synthetic Aperture Radar (SAR) data in Prince Albert, Saskatchewan, Gatineau, Québec and Fairbanks, Alaska, U.S. The CSA and RADARSAT International Inc. (RSI) have since signed agreements with network stations in Alice Springs and Hobart, Australia, Norway, the United Kingdom, Singapore, China, South Korea, Saudi Arabia, Thailand, Japan and Brazil for the direct reception of the RADARSAT-1 data. Furthermore, at this time a station in Argentina is undergoing the certification process.

Following a commissioning period, routine operations of RADARSAT-1 commenced in April 1996. At the end of December 2001, RADARSAT-1 had fulfilled a total of 114,000 user requests and an estimated 243,742 minutes of data and over 30,960 orbits had been acquired. The average system performance continues to be maintained at 96%. The worldwide client base includes more than 600 commercial and government users from over 60 countries.

Operational improvements made to the RADARSAT-1 MMO system include the integration of the commissioned database, which represented a major achievement. Access to orbit files for users who are interested in interferometric data acquisitions has been added, as well as real-time updates to the Query database. With the recent ASF Order Desk server move to the CSA, Network Security and overall operational efficiency has increased. A new Disaster Watch was also created in order to prepare a database for possible disasters in Canada and abroad. Moreover, the CSA became a signatory with ESA and CNES to the International Charter Space and Major Disasters in October 2000 to support disaster management efforts around the world with RADARSAT-1 and other satellites. Since the official launch of this Charter, there have been twelve events, ranging from the catastrophic earthquakes in El Salvador and India to the devastation that occurred with the eruption of Mount Etna in Italy and the landslides in Indonesia, requiring data acquired by RADARSAT.

The RADARSAT system is designed to provide a four-hour turnaround in the electronic delivery of images to the Canadian Ice Service (CIS) for producing ice charts for the Canadian Coast Guard. The CIS continues to be one of the leading users of RADARSAT-1 data. To date, the CIS has received more than 17,000 scenes of which over 13,000 have been archived since July 1997. A joint project between the CIS and RSI was undertaken to distribute RADARSAT-1 ice break-up products for communities in the Arctic Bay and Pond Inlet, Nunavut, thereby providing communities with critical information for rescue operations.

The RADARSAT-1 Background Mission had archived substantial volumes of images for future use, some of which include the first SAR coverage of the world's continents, their continental shelves and the polar ice caps. In the past year another campaign of data collection over the remote oceanic localities was initiated to develop further this unique multi-temporal, multi-seasonal and radar stereo data set. In addition, Background Mission is nearing completion of the landmass stereo coverage and has thus established the largest radargrammetric database in the world. Snapshots of North America, Western Europe and Australia have been produced with the data from Background Mission ScanSAR Narrow coverage. Having already produced mosaics of Canada, the U.S., Australia, Antarctica, and the Artic, a high-resolution radar mosaic of Africa is currently being prepared.

RSI continues to provide Earth-Observation data, derived information products, and leading-edge services to global clients. RSI's broad range of products includes geo-corrected imagery, digital elevation models, and application-specific products, such as flood and ocean oil seep vectors, to meet the demands for new markets. Products are delivered to clients via the Internet in near-real time for time-critical operations, such as disaster management and ship navigation. Other services include training, monitoring and emergency response services, custom product generation, as well as GIS project implementation.

Industrial Benefits

Recently the CSA requested a study to determine the achievements of RADARSAT data in support of ice mapping and related activities in Canada. To date, the Canadian Ice Services (CIS) is the only Canadian Government operational user of RADARSAT-1 data. RADARSAT-1 provides observations over a wider geographical area, at a much lower cost and risk, and in much less time than an aircraft. As a result, CIS has been able to improve its operational efficiency. Over the past five years (1995/96 to 1999/2000), the net average annual savings to CIS operations has been about $7.7 million ($38.5 million over 5 years).

These benefits have been felt most directly by the Canadian Coast Guard (CCG), the largest direct customer of CIS products. The CCG Ice Operation Centres can provide improved routing information to commercial shipping, which allows faster transit times. The accuracy of information derived from RADARSAT-1 to produce the Ice Charts, benefits the shipping companies by helping them navigate through ice-infested waters, by incurring less damage to ships and cutting the need for CCG escorts. The CCG estimates savings, in both operating costs and in transit time, as being between $18 million and $35 million, depending on the severity of ice conditions.

In the past, the prime contractor, SPAR, and its Canadian subcontractors created over 2,000 person-years of high technology employment during the construction phase of RADARSAT-1. Ongoing mission operations employ seventy five people at the CSA headquarters in Saint-Hubert, Québec, seven in Saskatoon, Saskatchewan, fifteen at the ground stations in Prince Albert, British-Columbia and Gatineau, Québec as well as more than eighty at RSI in Richmond, British-Columbia. In the highly competitive marketplace for space-base information, RSI has won roughly 15% of the world's space borne remote sensing market in just three years. In 2001, RSI has continued to process scenes and integrate RADARSAT data into information products for delivery to nearly 600 clients in sixty countries. RSI signed up eighty international distributions, fourteen RADARSAT-1 Network Stations and eleven Resources Centres. The market development for data archives is likely to be significant and may develop new benefits.

5.3.3 RADARSAT-2

Description

RADARSAT-1, Canada's first Earth Observation satellite launched in 1995, established Canada among the world leaders in satellite remote sensing technology. The RADARSAT system provides imagery to government and commercial users, primarily for resource management and environmental monitoring.

The next generation of Canadian SAR-based satellite, RARDARSAT-2, will be the most advanced satellite of its kind in the world. RADARSAT-2 will continue to provide all-weather, day and night coverage of the entire globe, and to support fishing, shipping, oil and gas exploration, offshore drilling, mapping and ocean research. Equipped with a C-band radar system, it will be the first fully commercial SAR satellite to offer multi-polarization, an important aid in identifying a wide variety of surface features and targets. It will also have the capability to image both the right and left with a resolution down to 3 metres and to access an area of 800 km on either side. This translates into a new range of products and services, which will contribute valuable new information on natural resources and the global environment.

The RADARSAT-2 Major Crown Project, in partnership with MacDonald Dettwiler and Associates (MDA), pertains to the design, development, testing, deployment and operations of a space-borne SAR satellite to provide global coverage of terrestrial phenomena as a follow-up to RADARSAT-1. Total project cost including the launch, is estimated at $521 million, with the government contributing $430 million and the balance of $91 million provided by MDA.

RADARSAT-2 design and construction improves upon *RADARSAT-1*, with new capabilities to ensure Canada's continued leadership in the satellite remote sensing global marketplace and, to create a commercial industrial satellite remote sensing industry in Canada.

Leading and Participating Departments and Agencies

Sponsoring Agency	-	Canadian Space Agency
Contracting Authority for the CSA/MDA Master Agreement	-	Canadian Space Agency
Participating Departments:	-	Natural Resources Canada (Canada Centre for Remote Sensing) - Environment Canada - Industry Canada - Fisheries and Oceans - National Defence - Foreign Affairs and International Trade

Prime and Major Sub-Contractors

Prime Contractor: - MacDonald Dettwiler & Associates (MDA)	 - Richmond, British Columbia
Major Sub-contractors: - EMS Technologies - RADARSAT International (RSI) - Boeing, Delta Launch Services	 - St. Anne de Bellevue, Québec - Richmond, British Columbia - Huntingdon Beach, California
- Alenia Aerospazio - AEC Able Engineering Co.	- Rome, Italy - Goletta, California, U.S.

Major Milestones

The major milestones of the MCP, by phase are the following:

Phase	**Major Milestones**	**Date**
A and B	Requirement Definition	June 1999
C and D1	Sub-System Design and Construction	August 2002
D2	Integration and Testing	July 2003
E1	Pre-Launch Preparations	August 2003
E2	Launch System Commissioning	November 2003 February 2004
E3	Operations	February 2004 to 2011

Progress Report and Explanation of Variances

In June 1994, the government directed the CSA to develop "an arrangement with the private sector for the development and operation of a RADARSAT follow-on program to maintain continuity of data following RADARSAT-1." In February 1998, following a formal Request for Proposal, MDA was selected to construct and operate RADARSAT-2.

The CSA and MDA signed a Master Agreement in December 1998 for the RADARSAT-2 mission, under a firm price agreement in which the government contribution was $225 million, in exchange for data. MDA was to invest $80 million. The Master Agreement between the CSA and MDA was updated in January 2000 to reflect changes in the schedule and the latest cost estimates. The company is responsible for spacecraft operations and business development, while the CSA is responsible for arranging the launch and maintaining the long-term national archive of RADARSAT-*2* data. The CSA will also provide an additional "in-kind" contribution of certain assets, plus the services of its David Florida Laboratory and the NRC's Institute of Aerospace Research Laboratory for spacecraft integration and testing.

In 1998-99, MDA initiated a number of subcontracts with key sub-system suppliers. The requirement review for the mission and the satellite system, and the preliminary design review for the bus and payload were completed during the past year. In December 1999, the CSA and MDA selected a European contractor for the construction of the RADARSAT-2 bus. In June 2000, the CSA and MDA selected a commercial launch service provider. In June 2001, critical modifications to be made to the RADARSAT-2 spacecraft were approved, in order to accommodate a potential future tandem mission with RADARSAT-3.

Given the potential uses of high-resolution radar data, the main challenge facing RADARSAT-2 is to develop a suitable data distribution policy.

Industrial Benefits

Significant industrial benefits in the space and Earth Observation sector are expected from this next-generation satellite system. The RADARSAT-2 program will generate employment growth in the Canadian knowledge-based economy, mostly from export sales, and spur the growth of small and medium-sized businesses as the Canadian infrastructure and services industry continues to grow.

A major objective of this project is the transition of the Earth Observation industry from the public sector to the private sector. The intent is to build on the SAR data and value-added markets established with RADARSAT-1 and to strengthen the Canadian industry's position as suppliers of SAR-related technology, systems and value-added products and services. Specifically, manufacturing potential and competitiveness will be developed in Canadian industry in the areas of phased array antenna design/manufacture, high performance receiver/transmitter design and manufacture and enhanced structure design. Additionally, opportunities will be created for the export of ground station systems. The new capabilities also make possible new applications, creating new and expanded markets for data sales and value-added products.

Direct industrial benefits from the construction of the RADARSAT-2 system will benefit all regions of Canada. The regional distribution of direct industrial benefits is shown in the table below.

	B.C.	**Prairies**	**Ontario**	**Québec**	**Atlantic**	**Total**
RADARSAT-2 ($ in millions)	$143.9 53.8%	$7.7 2.9%	$29.1 10.9%	$78.9 29.5%	$7.7 2.9%	$266.9 100%

5.4 Summary of Transfer Payment

	Forecast Spending 2001-2002 ($ in millions)	**Planned Spending 2002-2003** ($ in millions)	Planned Spending 2003-2004 ($ in millions)	Planned Spending 2004-2005 ($ in millions)
Grants				
Space Knowledge, Applications and Industry Development	1.2	**1.6**	2.1	2.3
Contributions				
Space Knowledge, Applications and Industry Development	46.0	**50.5**	45.8	24.3
Other Transfer Payments				
Space Knowledge, Applications and Industry Development	0.0	**0.0**	0.0	0.0
Total Grants, Contributions And Other Transfer Payments	47.2	**52.1**	47.9	26.5

5.5 Details of Transfer Payments

	Forecast Spending 2001-2002 ($ in millions)	**Planned Spending 2002-2003** ($ in millions)	Planned Spending 2003-2004 ($ in millions)	Planned Spending 2004-2005 ($ in millions)
Contributions to ESA Programs				
General Budget	5.8	**6.8**	6.8	6.8
Earth Observation	6.2	**13.3**	7.1	7.1
Satellite Communications	7.3	**7.6**	8.3	8.3
Subtotal	19.3	**27.7**	22.3	22.3
Contributions:				
Payload Flight Demonstration Program	26.0	**21.0**	21.0	0.0
	45.3	**48.7**	43.3	22.3

Nota: This table details contribution programs with funding in excess of $5 million per annum

Canada renewed the Co-operation Agreement with ESA for another ten years (2000-2009) in order to achieve the following policy, programmatic, and industrial development objectives:

- To diversify Canada's international space partnerships by fostering close collaboration with Europe and complimenting its long-standing priority relationship with the U.S.

- To support the implementation of CSP priorities in the areas of satellite communications, satellite navigation and positioning, Earth Observation and technology development.

- To develop and demonstrate advanced systems and technologies by participating on a cost-shared basis in European space programs that contribute to achieving CSP priorities and yielding important programmatic benefits, including flight opportunities for Canadian technologies.

- To sustain the competitiveness of the Canadian space industry and thereby create opportunities for Canadian industry on the European markets through the development of leading edge technologies and products, and the facilitation of strategic alliances between Canadian and European companies.

The new Co-operation Agreement maintains an emphasis on satellite communications and Earth Observation, may also invest in new areas of satellite navigation and positioning. The General Budget relates to all expenditures involved in the overall

management of ESA. The contribution to the General Budget is mandatory and provides certain rights and privileges, the most important being the right to participate in optional programs. The key milestones for the planning period addressed are the the launch of the Envisat satellite in March 2002, and the decision to participate in new optional programs, such as the development phase of GalileoSat, as current major programs are terminating.

The *Payload Flight Demonstration Program* is a public/private sector partnership to develop and fly a Ka-band multi-media payload on the Anik F2 satellite. Ending in 2003-04, the Program will have provided $80 million over four years (2000-2004) in government contributions. In addition, the three participating companies (e.g., COM DEV, EMS Technologies, and Telesat) are also investing at least 25 % of total project cost. In return, the Government is negotiating with Telesat Canada for the delivery of $60 million worth of Ka-band multi-media services at no cost to the Crown, over a ten-year period. The strategic objectives of the Program are to position the Canadian industry as a manufacturer of Ka-band payloads by space-qualifying advanced technologies, such as high frequency and larger band-width communications, on-board processing, and multi-beam antennas. The Program also contributes to the government's "Connecting Canadians" agenda by facilitating the provision of multi-media satellite services throughout Canada. The key milestones are the launch of Anik F2, scheduled for June 2003.

5.6 Sources of Respendable and Non-Respendable Revenue

Respendable Revenue

	Forecast Revenue 2001-2002 ($ in millions)	**Planned Revenue 2002-2003** ($ in millions)	Planned Revenue 2003-2004 ($ in millions)	Planned Revenue 2004-2005 ($ in millions)
Space Knowledge, Applications and Industry Development				
	0.0	**0.0**	0.0	0.0
Total Respendable Revenue	0.0	**0.0**	0.0	0.0

Non-Respendable Revenue

	Forecast Revenue 2001-2002 ($ in millions)	**Planned Revenue 2002-2003** ($ in millions)	Planned Revenue 2003-2004 ($ in millions)	Planned Revenue 2004-2005 ($ in millions)
Space Knowledge, Applications and Industry Development				
Testing Facilities and Services of the David Florida Laboratory	1.6	**1.7**	1.7	1.6
Other Initiatives less than $100,000	0.0	**0.0**	0.0	0.0
Total Non-Respendable Revenue	1.6	**1.7**	1.7	1.6

Total Respendable and Non-Respendable Revenue	1.6	**1.7**	1.7	1.6

5.7 Net Cost of Program for the 2002-03 Estimates Year

Net Cost of the Canadian Space Program for the Estimates Year	
	Canadian Space Program ($ in millions)
Net Planned Spending	**339.9**
Plus: Services Received without Charge	
Accommodations provided by Public Works and Government Services Canada (PWGSC)	**0.1**
Contributions covering employer's share of employees insurance premiums and expenditures paid by TBS	**2.9**
Worker's compensation coverage provided by Human Resources Development Canada (HRDC)	**0.0**
Salary and associated expenditures of legal services provided by Department of Justice Canada (DJC)	**0.1**
	3.1
Less: Non-Respendable Revenue	**1.7**
2002-2003 Net Cost of Program	**341.3**