CANADIAN SPACE AGENCY
2008-2009 DEPARTMENTAL PERFORMANCE REPORT

ANNEXES

3.3.1) Sources of Non-Respendable Revenue

Non-Respendable Revenue

($ in millions)	Actual Revenue 2006-2007	Actual Revenue 2007-2008	2008-2009			
			Main Estimates	Planned Revenue	Total Authorities	Actual Revenue
Space Based Earth Observation						
Royalty Revenues	3.3	4.0	N/A	1.0	N/A	3.9
Miscellaneous revenues	4.0	-	N/A	-	N/A	0.2
Space Science & Exploration						
Miscellaneous revenues	-	-	N/A	-	N/A	0.1
Satellite Communications						
Royalties from intellectual property	0.0	0.1	N/A	0.0	N/A	0.0
Generic Technological Activities in support of EO, SE and SC						
Testing Facilities and Services of the David Florida Laboratory	0.9	3.2	N/A	1.5	N/A	2.6
Total Non-Respendable Revenue	**8.2**	**7.3**	**N/A**	**2.5**	**N/A**	**6.8**

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

3.3.2) User Fee Reporting – User Fees Act

A. User Fee	Fee Type	Fee Setting Authority	Date Last Modified	2008-2009					Planning Years		
				Forecast Revenue ($000)	Actual Revenue ($000)	Full Cost ($000)	Performance Standard	Performance Results	Fiscal Year	Forecast Revenue ($000)	Estimated Full Cost ($000)
Fees charged for the processing of access requests filed under the Access to Information Act (ATIA)	Other products and services (O)	Access to Information Act	1992	0.1	0.1	73.7 (incl. Salary, EBP & O&M of the ATIA Coordinator)	Response provided within 30 days following receipt of request; the response time may be extended pursuant to section 9 of the ATIA. Notice of extension to be sent within 30 days after receipt of request. The Access to Information Act provides fuller details.	CSA responded to 17 access to information requests; 27 consultations from other government departments. CSA routinely waives fees in accordance with TBS guidelines. The Response time was within time limits in 94% of the requests.	2009-10 2010-11 2011-12	0.1 0.1 0.1	75 75 75
			Total	**0.1**	**0.1**	**73.7**			**Total**	**0.3**	**225**

B. Date Last Modified:

N/A

C. Other Information:

The Canadian Space Agency (CSA) collects user fees for information requests in accordance to the *Access to Information Act.* The total user fees collected in 2008-2009 are for application fees. There was no need to charge for preparation and search fees.

3.3.3) Policy on Service Standards for External Fees

A. External Fee	Service Standard	Performance Result	Stakeholder Consultation
Fees charged for the processing of access requests filed under the *Access to Information Act* (ATIA).	Response provided within 30 days following receipt of request; the response time may be extended pursuant to section 9 of the ATIA. Notice of extension to be sent within 30 days after receipt of request. The Access to Information Act provides fuller details.	The most common performance measurement is the percentage of "on-time" responses as stipulated by the performance standard. For this reporting period those are 94% for the *Access to Information Act.*	The Access to Information Act and the Access to Information Regulations establish the service standard. Consultations were undertaken by the Department of Justice and the Treasury Board Secretariat for amendments done in 1986 and 1992.

B. Other Information

In November 2004, Treasury Board ministers approved the *Policy on Service Standards for External Fees.* The Policy requires departments to report to on the establishment of service standards for all external fees charged on a non-contractual basis. In CSA's context this policy applies to the ATI Program, for fees charged for the processing of access requests filed under the *Access to Information Act* (ATIA).

3.3.4) Details on Project Spending

($ in millions)	Status[1]	Current Estimated Total Cost	Actual 2006-2007	Actual 2007-2008	2008-2009				Province[2]
					Main Estimates	Planned Spending	Total Authorities	Actual	
Space Based Earth Observation									
RADARSAT-1 (MCP)	EPA	731.2	8.2	7.5	8.1	8.1	5.2	5.2	Que.
RADARSAT-2 (MCP)	EPA	417.8	10.6	12.9	0.5	0.8	1.4	0.7	BC Que.
CHINOOK (MCP)[3]	PPA	93.1	0.9	0.8	19.2	19.2	0.0	0.0	Ont. Que.
RADARSAT CONSTELLATION (MCP)	PPA	143.2	8.2	2.6	50.1	50.1	50.0	8.1	BC Manit. Que. Ont.
Space Science and Exploration									
ALPHA PARTICLE X-RAY SPECTROMETER (APXS)	EPA	9.1	4.0	3.1	1.0	1.0	1.9	1.9	BC
JAMES WEBB SPACE TELESCOPE (JWST) (MCP)	EPA	136.0	22.2	30.3	17.2	17.2	34.1	34.1	Ont.
NEAR EARTH OBJECT SURVEILLANCE SATELLITE (NEOSSAT)	EPA	5.6	0.1	2.1	2.2	2.2	1.1	0.8	Ont.
ULTRA-VIOLET IMAGING TELESCOPE (UVIT)	EPA	5.9	1.5	1.0	1.5	1.5	1.9	1.0	Ont.
Satellite Communications									
MARITIME MONITORING AND MESSAGING MICRO-SATELLITE (M3MSAT)	PPA	5.4	-	0.1	3.1	3.1	2.8	0.5	Ont.
TOTAL		**1,575.2**	**62.4**	**61.1**	**102.9**	**103.2**	**98.4**	**52.3**	

Notes:

- Due to rounding, figures may not add to totals shown.
- Difference between Total Authorities and Actual Spending is mainly due to re-profiling of funds from 2008-2009 to future years associated with the management of Capital Projects.
- MCP = Major Crown project
- [1]Status of Project: EPA = Effective Project Approval PPA = Preliminary Project Approval
  [2]Provinces where the project will be carried out: BC= British Columbia Manit.= Manitoba Ont.= Ontario Que.= Quebec
- [3]Chinook Project is under redefinition in phase A.

3.3.5) Status Report on Major Crown Projects

Status Report on Major Crown Projects

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 meant to operate for five years to consistently supply timely and high-quality data to RADARSAT International (RSI), now a wholly owned subsidiary of MacDonald, Dettwiler and Associates (MDA), and other partners (federal and provincial government departments, NASA and the U.S. National Oceanic and Atmospheric Administration). RADARSAT-1 has continued to supply SAR data to clients in its extended mission, now in the 14th year of operation.

RADARSAT-1 operations continue with the same level of high performance for satellite reliability and image production. Since RADARSAT-2 has now been commissioned and declared operational, the CSA has notified NASA and NOAA that the RADARSAT-1 CSA-NASA-NOAA IMOU is terminated. In other words, no new RADARSAT-1 data are available to NASA and NOAA since May 2, 2008 under this IMOU. Deliberations on the continuation of RADARSAT-1 operations through consultations with main users have been completed and accordingly operations phase have been extended by three years beyond March, 2009.

RADARSAT-1 acquires high quality images of the Earth, covering 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 (now MacDonald, Dettwiler and Associates)	 - Ste.-Anne-de-Bellevue, Quebec
Major Sub-Contractors: - MacDonald, Dettwiler and Associates - SED Systems - EMS Technologies - COM DEV - Lockheed Martin	 - Richmond, British Columbia - Saskatoon, Saskatchewan - Ottawa, Ontario - Cambridge, Ontario - Longueuil, Quebec
Other Contractors: - Ball Aerospace - RADARSAT International (RSI) (now Geospatial Services, MacDonald, Dettwiler and Associates)	 - Boulder, Colorado - Richmond, British Columbia

Major Milestones

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

Major Milestones	**Date**
- Preliminary studies	Completed
- Feasibility and concept definition	Completed
- Systems requirement and preliminary design	Completed
- Development and testing up to qualification test review	Completed
- Manufacture of the prototype flight sub-systems up to acceptance testing of the sub-systems	Completed
- Assembly and integration of the sub-systems up to flight readiness review, plus post-launch and commissioning activities up to system acceptance	Completed
- First Antarctica mission - Second Antarctica mission - Original Mission Life of five years	Completed Completed Completed
- Satellite operations	April 1996 to March 2012

Progress Report and Explanation of Variances

Effective Program Approval was obtained for RADARSAT-1 in March 1991, with launch in November 1995 and beginning of operations in April 1996. The initial system included receiving stations for Synthetic Aperture Radar (SAR) data in Prince Albert (Saskatchewan), Gatineau (Quebec), Fairbanks (Alaska) and McMurdo (Antarctica). The CSA and RADARSAT International (now MDA-GSI) have since signed agreements with another 36 network stations distributed around the world: Argentina, Australia, Brazil, China, Italy, Japan, Kasakhstan, South Korea, Malaysia, Norway, Puerto-Rico, Russia, Saudi Arabia, Singapore, Taiwan, Thailand, Turkey, the United Kingdom and the United-States. Presently, a station in Portugal is undergoing the certification process. This list includes the agreements that have been also signed with transportable stations for the direct reception of RADARSAT-1 data: one in Italy, five in the U.S., one in Taiwan and one in France. Even more stations are expected to join the RADARSAT network in 2009. Since the IMOU with NASA/NOAA has been terminated effective May 2, 2008, McMurdo (Antarctica) is no longer available for RADARSAT-1 data reception and Fairbanks (Alaska) is now receiving data as a network station. Given that now there is no on-board recorder capability, one recorder was lost a few years back and the second one recently, more reliance will have to be put on direct reception at Network Stations.

Following a commissioning period, routine operations of RADARSAT-1 commenced in April 1996. The average system performance is being maintained at 95%. The worldwide client base includes more than 600 commercial and government users from over 60 countries.

Several system upgrades were completed over the past few years to enhance performance, reliability, and maintainability of RADARSAT-1. Highlights include: November 2006 – completed memory upgrade of database servers; December 2006 – completed development of a new reporting tool for the location of RADARSAT-1 archives; January 2007 – completed upgrade of all Mission Management Office workstations; March 2007 – completed upgrade of the Network File System server; August 2007 – implemented and demonstrated RADARSAT-1 contingency data ordering processes through operational tests with other Earth Observation satellites which resulted in successful data acquisition, processing and delivery of three ENVISAT images; October 2008 – completed development of a new tool to facilitate ingestion of reports for improving accuracy of the RADARSAT-1 catalogue; January 2009 – completed upgrade of database server disks to a higher capacity.

Since October 2000, the CSA is a signatory, along with the European Space Agency (ESA) and the Centre National d'Études Spatiales (CNES) in France, to the "International Charter on Space and Major Disasters". The emphasis of the Charter is on multi-satellite support for disaster response and mitigation efforts around the world utilising RADARSAT-1 and satellites of other Charter member agencies. Since its official launch, the Indian Space Research Organisation (ISRO), the National Oceanic and Atmospheric Administration (NOAA), Argentina's Comisión Nacional de Actividades Espaciales (CONAE), the Japanese Aerospace Exploration Agency (JAXA), the United States

Geological Survey (USGS) and the Disaster Monitoring Constellation (DMC) along with the British National Space Centre (BNSC) and the China National Space Administration (CNSA) have also joined the Charter and participate fully in its operations.

As of March 31, 2009, there have been 213 activations of the Charter for events such as: floods in Afghanistan, U.S., Uruguay, U.-K., Pakistan, China, India, Vietnam, North Korea, West Africa, Slovenia, Dominican Republic, Mexico, Bangladesh, Fiji, South Africa, Bolivia, Ecuador, Namibia; Tsunami in the Solomon Islands; Earthquakes in Afghanistan, Chili, Peru, Rwanda, and China; Volcanic eruptions in Colombia and Ecuador; oil spills off the coasts of Chili and Norway; forest fires in the Canari Islands, Paraguay, Greece, California and Chili and; wind storms (hurricanes and tornadoes) in Mexico, Nicaragua, U.S. and Myanmar. The Charter operations also included an activation in Canada in April 2008 for floods in New Brunswick. The most recent devastating disasters, namely Cyclone Nargis in Myanmar, Hurricanes Gustav, Hanna and Ike in Haiti and the U.S. and the earthquake in China were covered with the assistance of Canada's RADARSAT-1.

The RADARSAT-1 system has been improved to provide on average a less than 2.5-hour turnaround in the electronic delivery of images to the Canadian Ice Service (CIS) for the production of ice charts and bulletins for the Canadian Coast Guard and other marine clients. The CIS continues to be one of the leading users of RADARSAT-1 data since the first operational data began to flow in February 1996. Recently, the CIS has been collaborating with Noetix Research, the CSA, and RSI (now MDA) on an ESA-sponsored Global Monitoring for Environment and Security (GMES) Project - The Northern View - to provide regular RADARSAT-1 images in support of a Floe Edge Service for two communities in the Canadian Arctic.

The RADARSAT-1 Background Mission has archived one of the largest microwave remote sensing data collections in the world. In fact, it is the first multi-mode uniformly collected database of its kind ever created. The data archive is the result of several Background Mission global coverage campaigns undertaken in the past seven years. These include a complete coverage of the world's continents, continental shelves and polar ice caps, as well as complete coverage of nearly the Earth's entire landmass with two RADARSAT-1 imaging beams for the first ever beam-pair stereo data collection. This is the world's largest radargrammetric dataset currently available. Some of the continents, including North America, were covered more than once to generate seasonal snapshots in the form of wide-area SAR mosaics. High-resolution RADARSAT-1 image mosaics of Canada, the U.S., Australia and Africa were produced with the Background Mission data. Several time- and site-specific coverage types have also been done, such as that of the remote oceanic island localities, the world's major cities and capitals. A seasonal coverage of the tropical deltas is also underway, as is also a four-season continuous coverage of the Arctic. The latter coverage, which now has uninterrupted data records over the Arctic since the summer of 2003, supports the growing interest in the Arctic and climate change captured within the International Polar Year (IPY) activities. These baseline coverage campaigns of RADARSAT-1 have established benchmarks for RADARSAT-2 and the follow-on Canadian SAR missions to build upon.

MacDonald, Dettwiller and Associates (MDA) Geospatial Services Inc. (GSI) continues to provide Earth-Observation data, derived information products, and leading-edge services to global clients. The broad range of MDA/GSI 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 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, and custom product generation, as well as Geographic Information Systems (GIS) project implementation.

Industrial Benefits

The Canadian Space Agency undertook 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 main Canadian Government operational user of RADARSAT-1 data. RADARSAT-1 provides observations over a wider geographical area, at much lower cost and risk, and in much less time than with an aircraft. As a result, CIS has been able to improve its operational efficiency. Over five years (1995 to 2000), the net average annual savings to CIS operations have been about $7.7 million per year ($38.5 million over 5 years). The same annual benefits have continued for the past eight years.

The Canadian Coast Guard (CCG), the largest customer of CIS products, has felt these benefits most significantly. The CCG Ice Operation Centres can provide improved routing information to commercial shipping, which allows for faster transit times. The shipping industry has benefited from the accuracy of RADARSAT information to produce ice charts. The shipping companies believe that as a result of RADARSAT based ice charts, there have been savings in transit time through ice-infested waters. These commercial shipping savings are estimated to be $18 million a year. Other benefits included less damage to ships and a reduction in the need for CCG escorts. As for the CCG, an estimated dollar savings in both operating costs and transit time to be between $3.6 million and $7 million a year, depending on the severity of ice conditions.

In the past, the prime contractor SPAR and its Canadian sub-contractors created over 2,000 person-years of high technology employment during the construction phase of RADARSAT-1. Ongoing mission operations employ 75 people at the CSA's headquarters in St-Hubert (Quebec), 7 in Saskatoon (Saskatchewan), 15 at ground stations in Prince Albert (Saskatchewan) and Gatineau (Quebec), as well as more than 80 at RSI (now MDA) in Richmond (British Columbia). In the highly competitive marketplace for space-based information, MDA continues to capture roughly 15% of the world’s space borne remote sensing market. MDA has continued to process scenes and integrate RADARSAT data into information products for delivery to nearly 600 clients in 60 countries, and furthermore, MDA has signed up 80 international distributions, 18 RADARSAT-1 Network Stations and 11 Resources Centres. The market development for data archives is likely to be significant and an area in which new benefits may develop.

RADARSAT-2

Description

RADARSAT-2 is the next generation synthetic aperture radar (SAR) Canadian Earth Observation satellite. Launched in December 2007, RADARSAT-2 provides all-weather, day-and-night coverage of the entire globe to support fishing, shipping, oil and gas exploration, offshore drilling, mapping and ocean research. Equipped with a C-band radar system, it is the first fully commercial SAR satellite to offer multi-polarization, an important aid in identifying a wide variety of surface features and targets. It also has the capability to image both the right and left with a resolution down to three metres and to access an area of 800 kilometres on either side. This translates into a new range of products and services, which contributes valuable new information on natural resources and the global environment.

The RADARSAT-2 Major Crown Project, in partnership with MacDonald, Dettwiler and Associates (MDA), carried out 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. The current estimated total cost from CSA's budget is $417.8 million.

RADARSAT-2's 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 International Trade Agriculture Canada

Prime and Major Sub-Contractors

Prime Contractor: - MacDonald, Dettwiler, and Associates (MDA)	 - Richmond, British Columbia
Major Sub-Contractors: - EMS Technologies (now MacDonald, Dettwiler, and Associates) - Alenia Aerospazio - AEC Able Engineering Co. - RADARSAT international (RSI) (now MacDonald, Dettwiler and Associates) - STARSEM	 - Ste.-Anne-de-Bellevue, Quebec - Rome, Italy - Goletta, California - Richmond, British Columbia - Baikonur, Kazakhstan

Major Milestones

The major milestones on Major Crown Project, by phase, were the following:

Phase	Major Milestones	Date
A and B	Requirement Definition	June 1999
C	System Design	May 2002
D	Sub-system Construction Integration and Testing Pre-launch Preparations Launch/Commissioning complete	September 2005 January 2007 July 2007 December 2007 April 2008
E	Operations	2008 to 2015

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 (MDA) 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 (DFL) and the NRC Institute of Aerospace Research Laboratory for spacecraft integration and testing.

In November 1998, Treasury Board (TB) approved the RADARSAT-2 Major Crown Project with a funding envelope of $242.2 million. In March 2000, Treasury Board approved an increase of $47.1 million to cover the cost of changing bus suppliers, required by U.S. government restrictions imposed on the U.S. bus supplier at that time, and an increase of $12.3 million for upgrades to existing satellite ground station infrastructures. In June 2000, Treasury Board approved an increase of $108 million to cover the cost of procuring a commercial launch as a result of NASA withdrawing from the agreement to provide launch for RADARSAT-2 in exchange for data, as it did for RADARSAT-1. In June 2001, Treasury Board approved an increase of $6 million to cover the cost of critical modifications to be made to the RADARSAT-2 spacecraft in order to accommodate a potential future tandem mission with RADARSAT-3.

The development of the RADARSAT-2 satellite was completed at a slower pace than planned. Delays encountered by the main contractor and sub-contractors in the production of some of the satellite components have resulted in a significant delay in the assembly, integration and testing of the spacecraft. The Extendible Support Structure (ESS), one of the primary spacecraft sub-systems, was delivered to the Assembly, Integration and Test (AI&T) site at the DFL in October 2003. The Solar Arrays and the Bus were delivered to DFL in April and May 2004, respectively. The SAR antenna was delivered in September 2005. The assembly, integration and test of the RADARSAT-2 spacecraft at the DFL, along with the operations-preparations activities at the CSA in St-Hubert were successfully completed in September 2007. RADARSAT-2 was launched on December 14, 2007 and associated commissioning activities were completed by the end of April 2008. As a result, the necessary procedures and tools were developed to provide fully operational order desk services to the Government of Canada (GoC) clients with regard to order handling, data acquisition planning, data archiving and web-based reporting on the client usage of the RADARSAT-2 SAR payload.

The additional costs to complete the construction and launch of RADARSAT-2 were at the main contractor's expense. However, these additional delays required that the CSA RADARSAT-2 project office remained operational to cover the remaining activities until project close-out. With RADARSAT-2 being fully operational and the government departments making regular use of the data, the CSA is preparing the closure of the RADARSAT-2 Major Crown Project with the objective to submit the closure report to Treasury Board in Fall 2009.

Industrial Benefits

Significant industrial benefits in the space and Earth observation sectors 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 intention is to build on the SAR data and value-added markets established with RADARSAT-1 to strengthen the Canadian industry's position as a supplier of SAR-related technology, systems and value-added products and services. Specifically, manufacturing potential and competitiveness will be encouraged in Canadian industry in the areas of phased array antenna design/manufacture, high performance receiver/transmitter design and manufacture, and enhanced structure design. Moreover, opportunities will be created for the export of ground station systems. The new capabilities also make new applications possible, creating new and expanded markets for data sales and value-added products.

As of March 31, 2009, the CSA had funded $384.4 million worth of work to Canadian industry directly attributable to the RADARSAT-2 Major Crown Project (MCP). Direct industrial benefits from the construction of RADARSAT-2 had benefited all regions of Canada. The regional distribution of direct industrial benefits is shown in the following table.

Regional Distribution of RADARSAT-2 Contracts
(As of March 2009)

Program	British Columbia	Prairie Provinces	Ontario	Quebec	Atlantic provinces	Total Canada
RADARSAT-2	59.1%	0.3%	10.2%	29.9%	0.5%	100%

Note: Due to rounding, decimals may not add up to totals shown.

Summary of Non-Recurring Expenditures ($ in millions)
(As of March 2009)

Program	Current Estimated Total Expenditure	Actuals at March 31, 2009	Future Years
RADARSAT-2	417.8	417.6	0.1

RADARSAT Constellation

Description

The RADARSAT Constellation is the follow-on to RADARSAT-1 and RADARSAT-2. RADARSAT-1 was launched in 1995 and is still operating. RADARSAT-2, developed in partnership with the private sector, was launched in 2007 for a seven-year mission. Canada has established itself as a leading global supplier of C-band satellite radar data. The RADARSAT Constellation will enhance this leadership and position Canadian industry in technology and value-added product markets.

The RADARSAT Constellation is designed as a scalable constellation of three small satellites. The satellites will be launched in 2014, 2015 and 2016. With a constellation, the time between successive imaging of the same part of the Earth (revisit time) is significantly reduced. The creation of a three-satellite constellation will increase the frequency of available information, as well as the reliability of the system, making it better suited to operational requirements of Departments. In the event of a satellite failure, the other satellites can continue to provide a reduced level of service. The lower cost of satellites facilitates the replacement of individual satellites and makes the system scalable.

The scope of the RADARSAT Constellation Major Crown Project (MCP) includes the design, development manufacture, integration, test and launch of the satellites plus the design, development, manufacture and installation of the associated ground segment. One year of operation of the 3-satellite constellation is also included as well as an applications development program.

The RADARSAT Constellation will provide all-weather day and night data in support of three main user areas: maritime surveillance, disaster management and ecosystem monitoring. The three satellite constellation provides average daily coverage of most of Canada and its surrounding waters. Coverage increases significantly in Canada's North. The constellation will provide coverage two to three times daily of the Northwest Passage.

In support of maritime surveillance requirements of Environment Canada, Department of National Defence, Department of Fisheries and Oceans, Canadian Coast Guard and Transport Canada, the RADARSAT Constellation is the principal data source envisaged for wide area surveillance of Canada's remote areas and marine approaches. Only satellite data can offer regular cost effective coverage to task ships and aircraft to intercept suspect vessels. The daily coverage of marine areas will also support fisheries monitoring, ice and iceberg monitoring, pollution monitoring and integrated ocean and coastal zone management.

In support of disaster management, both in Canada and globally, the RADARSAT Constellation can provide high resolution, all-weather (3 m) imagery of most places in the world on a daily basis. This data is critical to disaster mitigation, warning, response and recovery. Disaster types supported include flood monitoring and relief, oil spills, changes in the permafrost in northern Canada, volcano and earthquake warning and hurricane monitoring.

In support of ecosystem monitoring of Natural Resources Canada, Environment Canada, Parks Canada and Agriculture and Agri-foods Canada, the RADARSAT Constellation will be a critical source of information for agriculture, forestry and wildlife habitat. The Constellation will also provide medium resolution data for wide area change detection, supporting water quantity monitoring, wetlands mapping and coastal change monitoring.

In addition, the RADARSAT Constellation develops Canadian high technology design and manufacturing capabilities and the integration of satellite data into information products and services. Canada's space and geomatics industries will benefit from increased positioning on international markets and privileged access to data essential to many international users.

The RADARSAT Constellation will provide C-band SAR data continuity to existing RADARSAT users, including the Canadian Ice Service, which relies on SAR data to support safe shipping in Canada.

Leading and participating Departments and Agencies

Sponsoring Agency:	Canadian Space Agency
Contracting Authority:	Public Works and Government Services Canada
Participating Departments:	Natural Resources Canada Environment Canada National Defence Foreign Affairs and International Trade Industry Canada Fisheries and Oceans Agriculture and Agri-foods Canada Transport Canada Public Security Indian and Northern Affairs Canada Parks Canada

Prime and Major Sub-Contractors

Prime Contractor: - MacDonald, Dettwiler and Associates (MDA)	- Richmond, British Columbia
Major Sub-Contractors: - MacDonald, Dettwiler and Associates - Magellan Aerospace, Bristol Aerospace - COMDEV Limited - MacDonald, Dettwiler and Associates	 - Ste.-Anne-de-Bellevue, Quebec - Winnipeg, Manitoba - Cambridge, Ontario - Halifax, Nova Scotia

Major Milestones

The major milestones on Major Crown Project, by phase, are the following:

Phase	Major Milestones	Date
A	Requirement Definition	March 2008
B	Preliminary Design	March 2010
C	Detailed Design	January 2012
D	Launch satellite #1 Launch satellite #2 Launch satellite #3	May 2014 August 2015 November 2016
E1	Operations (part of MCP)	to March 2018
E2	Operations (not part of MCP)	2018 to 2024

Progress Report and Explanation of Variances

On December 13, 2004, the Domestic Affairs Committee of Cabinet granted approval-in-principle to a ten-year, $600 million program to implement a RADARSAT Constellation aimed at addressing user needs in relation to Canadian sovereignty and marine surveillance, environmental monitoring and change detection, and disaster management. The RADARSAT Constellation is to be government-owned and operated.

In Budget 2005, the CSA was provided with an additional $110.9 million over five years (2005-2006 to 2009-2010). Combined with a further $89.1 million from the CSA's reference levels, a total of $200 million was identified for CSA to work with the Canadian space industry on the development of the next generation of advanced radar remote sensing satellites. This funding covers Phases A (Initial Planning and Identification Phase) through C (Detailed Definition Phase) of the RADARSAT Constellation Project, but is insufficient for building and operating the satellites.

On June 6, 2005, Treasury Board granted Preliminary Project Approval (PPA) for the RADARSAT Constellation and expenditure authority for the Project Initial Planning and Identification Phase A at a substantive cost estimate of $13 million (excluding GST). Phase A sought to finalize feasibility studies, define user requirements, payload and bus options for the mission, and reduce technology risks for the antenna, transmit/receive modules, and sensor electronics.

The Phase A work started in July 2005 and was completed in December 2006. Phase A was then extended to allow additional technical risk reduction activities to continue during the period prior to the Phase B contract award. This was completed in March 2008.

A revised PPA Treasury Board Submission to proceed to Phases B and C was approved in March 2007. In December 2006, Public Works and Government Services Canada (PWGSC) initiated a competitive Request for Proposal (RFP) process to identify a prime contractor for the RADARSAT Constellation project (i.e., for Phases B/C/D of the space segment and a portion of the ground segment) and negotiate a contract for Phases B and C with the winning prime contractor, MDA.

The contract for Phase D would follow successful completion of Phases B and C, obtaining the necessary funding and the granting of Effective Project Approval (EPA) from Treasury Board. In September 2008, PWGSC obtained authority to enter into a contract with MDA. Negotiations for Phase B were completed in October 2008 and the contract for Phase B was awarded to MDA in November 2008. It is planned to amend the contract for Phase B to include the scope of Phase C once the negotiations for Phase C have concluded. Phases B and C are planned to last approximately 3 years.

Industrial Benefits

Significant industrial benefits in the space and Earth observation sectors are expected from the RADARSAT Constellation program. It is expected to generate employment growth in the Canadian knowledge-based economy and spur the growth of small and medium-sized businesses as the Canadian infrastructure and services industry continues to grow. As of September 30, 2008, the CSA has funded $13 million worth of work to Canadian industry directly attributable to the RADARSAT Constellation Major Crown Project.

CSA's approach to regional distribution has been developed in consultation with Industry Canada and the Atlantic Opportunities Agency (ACOA). It is based on applying CSA's overall regional distribution targets to the project, and will require bidders to apply these targets on a "best efforts" basis. The prime contract includes a requirement for 70% Canadian content, excluding launch services. Given the past difficulty in achieving the targets in Atlantic Canada, a minimum of 3.5% benefits has been set for that region. The prime contract includes reporting obligations and performance measures as well as financial penalties for not meeting the minimum Atlantic Canada content. CSA will continue to work closely with Industry Canada and ACOA to monitor regional distribution achievements and to support the prime contractor in the delivery of the given targets.

Regional Distribution of RADARSAT Constellation
(As of March 2009)

Program	British Columbia	Prairie Provinces	Ontario	Quebec	Atlantic	Total Canada
RADARSAT Constellation	37.8%	9.8.%	16.9%	33.0%	2.5%	100%

Note: Due to rounding, decimals may not add up to totals shown.

Summary of Non-Recurring Expenditures ($ in millions)
(As of March 2009)

Program	Current Estimated Total Expenditure	Actuals at March 31, 2009	Future Years
RADARSAT Constellation	143.2	23.5	119.7

James Webb Space Telescope

Description

The James Webb Space Telescope (JWST) is a joint mission of NASA, ESA, and the Canadian Space Agency. The mission concept is for a large filled-aperture telescope located 1.5 million km from Earth. Like Hubble, the JWST will be used by the astronomy community to observe targets that range from objects within our Solar System to the most remote galaxies, which are seen during their formation in the early universe. The science mission is centered on the quest to understand our origins, and specifically aimed at:

- Observing the very first generation of stars to illuminate the dark universe when it was less than a billion years old;
- Understanding the physical processes that have controlled the evolution of galaxies over cosmic time, and, in particular, identifying the processes that led to the assembly of galaxies within the first 4 billion years after the Big Bang;
- Understanding the physical processes that control the formation and early evolution of stars in our own and other nearby galaxies; and,
- Studying the formation and early evolution of proto-planetary disks, and characterizing the atmospheres of isolated planetary mass objects.

The JWST is now scheduled for launch in 2014. JWST instruments will be designed to work primarily in the infrared range of the electromagnetic spectrum, with some capability in the visible range. JWST will have a large mirror, 6.5 meters in diameter and a sunshield the size of a tennis court that will both fold up and open once in outer space.

Canada is providing the Fine Guidance Sensor (FGS) and Tuneable Filter Imager (TFI). The FGS is integral to the attitude control system of JWST, and consists of two fully redundant cameras that will report precise pointing information of JWST. Canadian expertise in this area has been established with the successful fine error sensors for the FUSE mission. Packaged with the FGS but functionally independent, the Tuneable Filter Imager is a unique, narrow-band camera with imaging capability. For example, it will allow astronomers to search for extrasolar planets through a technique called *coronography*, which means that the light from a star will be blocked out so that astronomers can see what is in the star's neighbourhood.

The JWST-FGS Major Crown Project, with COM DEV as prime contractor, consists of the design, development, integration and testing and integration into the spacecraft, launch and commissioning of the Fine Guidance Sensor and Tunable Filter Imager.

By participating in this leading-edge international space exploration mission, the Canadian Space Agency is actively promoting Canadian scientific expertise and innovative, advanced space technologies. The National Research Council's Herzberg Institute of Astrophysics is a key Government of Canada partner for activities related to the development of science instruments and distribution of telescope data.

In return for its overall investment in the JWST, Canada will obtain a minimum of 5% of the time on this unique space telescope. Already, the news of Canada's involvement in this international space exploration mission is inspiring youth, educators and amateur astronomers, and rallying members of Canada's world-renowned astrophysics community.

Leading and Participating Departments and Agencies

Sponsoring Agency:	Canadian Space Agency
Contracting Authority:	Public Works and Government Services Canada for the Canadian Space Agency
Participating Departments:	NRC's Herzberg Institute of Astrophysics Industry Canada with the support of Université de Montréal.

Prime and Major Sub-Contractors

Prime Contractor: - COM DEV Canada	 - Ottawa, Ontario
Major Sub-Contractors: - Teledyne - Corning Netoptix - ABB Bomem - MDA - CDA - ESTL - INO - IMP - LHM - Barr	 - U.S. - U.S. - Canada - Canada - U.S. - Europe - Canada - Canada - Canada - U.S.

Major Milestones

The major milestones, by phase, are the following:

Phase	Major Milestones	Date
A	Requirement Definition	2003-2004
B	Preliminary Design	August 2004 to May 2005
C	Detailed Design	July 2005 to March 2009
D	Manufacturing/Assembly; Integration/Testing; Pre-launch preparations, Launch/System Commissioning	May 2007 to December 2014
E	Operations	2014-2015 to 2019-2020

Note: The Major Crown Project terminates with the completion of Phase D.

Progress Report and Explanation of Variances

In March 2004, Treasury Board gave Preliminary Project Approval for Phases B, C and D at an indicative cost of $67.2 million. In December 2006, before the completion of the detailed design of the FGS, the CSA requested increased expenditure authority to complete the project. Treasury Board granted Effective Project Approval for a substantive total cost estimate of $98.4 million in February 2007 with the condition "that the Canadian Space Agency provide reports to Treasury Board at the completion of Phases C and D of the JWST project which include up-to-date information on the project scope, costs, schedule and risks". At the same time, the project became a Major Crown Project (MCP).

Overall, the Fine Guidance Sensor with the Tunable Filter Instrument contribution is technically very challenging and proved to be more complex than envisioned by the CSA and the prime contractor at the time the substantive estimates were generated. Extremely tight tolerances on the optics combined with the need for reliable and precise mechanisms that must operate in a harsh cryogenic temperature environment required more design and testing effort than was originally envisaged. The full complexities of the FGS became evident during the Phase C, after the first of the two-planned Critical Design Reviews (CDR). The first CDR, held in March 2007, for the guider function of the FGS, did reveal some technical issues, which required additional effort to resolve. This Review took place after the Effective Project Approval (EPA) received in February 2007. After this first CDR, with the focus now turning toward the preparation of the system level CDR, new issues became apparent requiring additional analysis. Testing of the Tunable Filter Imager prototype also revealed technical issues that needed to be addressed. The manufacturing of the FGS will continue in 2009 and will be delivered to NASA in 2010.

During this transition between the completion of the detailed design phase (Phase C) and the initiation of the manufacturing phase (Phase D) the project faced the prospect of a significant cost growth and therefore required the CSA to return to Treasury Board to amend its Effective Project Approval (EPA) for the JWST Major Crown Project. The current estimated total cost for the Definition and Implementation phases is now $136.0 million. On December 2007, Treasury Board granted a revised Effective Project Approval.

Industrial Benefits

As of March 2009, the CSA has funded $98.4 million worth of work to Canadian industry directly attributable to the JWST-FGS Major Crown Project. Direct industrial benefits from the construction of the JWST-FGS and TFI system will benefit central regions of Canada. Although there is no regional distribution requirement for this project, the following table provides an approximate distribution:

Regional Distribution of JWST Contracts
(As of March 2009)

Program	Ontario	Quebec	Atlantic Provinces	Total Canada
JWST-FGS and TFI	86.3%	11.4%	2.3%	100%

Summary of Non-Recurring Expenditures ($ in millions)
(As of March 2009)

Program	Current Estimated Total Expenditure	Actuals at March 31, 2009	Future Years
JWST-FGS and TFI	136.0	98.4	37.6

3.3.6) Details on Transfer Payments Programs (TPPs)

Contribution to European Space Agency (ESA)	
Start date: January 1, 2000	**End Date:** December 31, 2009
Description Enhance Canadian industry's technological base and provide access to European markets for value added products and services in the field of Earth Observation (EO) and Telecommunications, allow the participation of Canadian academia and make possible the demonstration of Canadian space technologies in European Science and Exploration missions.	
Strategic Outcome Canada's presence in space meets the needs of Canadians for scientific knowledge, space technology and information.	
Expected Results (Program Activities Level) **Space Based Earth Observation:** The benefits of activities involved in Earth Observation from space serve Canadian users in the fields of environment, resource and land-use management, and security and sovereignty. **Space Science and Exploration:** Participation in Canadian and international missions expands the scientific knowledge base made available to Canadian academia and R&D communities in the areas of astronomy, space exploration and solar-terrestrial relations, as well as in physical and life sciences. **Satellite Communications:** State-of-the-art systems and applications are developed to satisfy the needs of the Canadian government and population in order to ensure that Canada remains a world leader in satellite communications. **Generic Technological Activities in support of Earth Observation, Space Science and Exploration, and Satellite Communications:** Canada’s industrial technological capabilities can meet the needs of future space missions and activities. **Expected Accomplishments** Successful development and demonstration of advanced technologies, systems, components, or studies provided for in the contracts awarded by ESA to Canadian firms under the following EO programs: EOEP, GMES Service Element, and GMES Space Component. Successful development and demonstration of advanced technologies, systems, components, or studies provided for in the contracts awarded by ESA to Canadian firms under the following Telecommunications programs: ARTES 1, 3, 4, 5, 8 and GalileoSat.	

Growing utilization of data obtained from ESA on markets and Earth Observation and Telecommunications technologies as strategic information for government departments, agencies and industries in Canada.

Demonstration of space-qualified technologies and products developed by Canadian firms for the space exploration markets via our participation to Europe's space exploration program Aurora.

Development of new alliances and/or strengthening of established alliances between Canadian and European companies, to diversify Canada's international space partnerships and complement its long-standing relationship with the U.S.

Actual Accomplishments

Several technologies and skills have been developed and improved through the participation of Canadian companies in ESA programs. Some businesses have integrated these technologies into products, allowing them to sell these products in other than European markets. In addition to generating revenues, the development and improvement of space technologies also created or maintained specialized jobs. In addition, specialized skills were created in the areas of space hardware, ground segment, and space technology applications.

The program served to boost the visibility of Canada in European markets. Canadian contractors see the ESA Contribution program as a means of cultivating business relationships. The program also fosters regional development and access to other markets by virtue of the successes of companies in Europe. Furthermore, Canada expanded its knowledge and technology in fields such as weather and ice movement forecasting, Earth Observation data, satellite communications technologies, environmental monitoring and security.

($ in millions)	Actual Spending 2006-2007	Actual Spending 2007-2008	Planned Spending 2008-2009	Total Authorities 2008-2009	Actual Spending 2008-2009	Variance between Planned vs. Actual
Space Based Earth Observation (EO)	9.9	7.3	9.9	7.6	7.4	2.4
Space Science and Exploration (SE)	5.8	6.9	5.8	8.5	8.2	(2.4)
Satellite Communications (SC)	11.0	13.7	12.5	11.2	10.9	1.6
Generic technological activities in support of EO, SE and SC	8.7	7.3	8.1	8.9	8.3	(0.2)
Total Contributions	35.5	35.2	36.3	36.3	34.9	1.4
Total PA	**35.5**	**35.2**	**36.3**	**36.3**	**34.9**	**1.4**

Comment on Variances

Several factors explain the year-to year fluctuations in spending as well as the yearly variation between program activities under Canada/ European Space Agency (ESA) programs: the budgetary cycle of ESA differs from the one of Canada, the cash flow requirements of ESA programs which Canada is participating in (the budget requirements vary with the project's delivery phase), the slippage in the disbursements for Canada/ESA programs (the programs and associated contracts to industry are delivered by ESA; hence, CSA has no control on actual project implementation), the potential cost increases in development programs, as well as the inflation rate and exchange rate fluctuations.

Consequently, the positive variance of $1.4 million in 2008-2009 mainly corresponds to the risk funds re-profiled to future years arising from the sound management of this Program. The variances are in accordance with the objectives and terms and conditions of the 2000-2009 Canada/ESA Cooperation Agreement.

Significant Audit & Evaluation Findings and URL (s) to the Last and / or Evaluation

Canada is well thought of by Europeans, as the 28 years of cooperation between ESA and Canada clearly demonstrate. Canadian companies have made a significant contribution to the many technologies developed in the areas of Earth Observation and Satellite Communications.

Several businesses have developed business relationships with Europe thanks to the Agreement, and all stakeholders in the program agree that these relationships could continue, provided that Canada maintains its financial contribution to ESA. Canadian businesses have cultivated alliances with each other to benefit from or facilitate access to European markets through ESA programs under the Agreement.

The program helps diversify and open markets and contributes to the achievement of objectives under the Canadian Space Strategy respecting Earth Observation and Satellite Communications. However, it does not lead to the transfer of technologies as much as to the exchange of information on technologies.

Small and medium-sized companies have difficulty taking part in ESA programs and require greater support, not only to access these markets, but also to develop expertise so that they can continue doing business in these markets after their initial participation in ESA programs.

Source: Evaluation of the Canada/ESA Cooperation Agreement
www.asc-csa.gc.ca/eng/publications/er-0405-0202.asp

Notes:

- Due to rounding, figures may not add to totals shown.
- This table details contribution programs with funding in excess of $5 million per annum.

CASSIOPE Mission	
Start date: November 1, 2003	**End Date:** March 31, 2012

Description

Support the integration of two payloads on a single generic Canadian small satellite bus the CASCADE telecommunications Ka-Band component and the enhanced Polar Outflow Probe (ePOP) scientific instrument.

Strategic Outcome

Canada's presence in space meets the needs of Canadians for scientific knowledge, space technology and information.

Expected Results (Program Activities Level)

Space Based Earth Observation:

The benefits of activities involved in Earth Observation from space serve Canadian users in the fields of environment, resource and land-use management, and security and sovereignty.

Space Science and Exploration:

Participation in Canadian and international missions expands the scientific knowledge base made available to Canadian academia and R&D communities in the areas of astronomy, space exploration and solar-terrestrial relations, as well as in physical and life sciences.

Satellite Communications:

State-of-the-art systems and applications are developed to satisfy the needs of the Canadian government and population in order to ensure that Canada remains a world leader in satellite communications.

Generic Technological Activities in support of Earth Observation, Space Science and Exploration, and Satellite Communications:

Canada's industrial technological capabilities can meet the needs of future space missions and activities.

Expected Accomplishments

Development and demonstration of the CASCADE Ka-Band telecommunications payload designed and built by Canadian companies. CASCADE is the precursor of communication satellite constellations that will help position the Canadian industry on the international market as a supplier of advanced components and a service provider.

Development of a small Canadian scientific satellite, the enhanced Polar Outflow Probe (ePOP), which will probe the upper atmosphere and ionosphere region where solar variability influences global change in various time scales.

Development of a generic Canadian small satellite bus that could also be used for future Canadian missions.

Actual Accomplishments

Completed manufacture, assembly and integration of the Cascade payload. Completed manufacture, assembly and integration of ePOP instruments, data handling units and booms. Completed manufacture, test and integration of the generic small satellite bus. Started the environment testing of the spacecraft at DFL.

($ in millions)	Actual Spending 2006-2007	Actual Spending 2007-2008	Planned Spending 2008-2009	Total Authorities 2008-2009	Actual Spending 2008-2009	Variance between Planned vs. Actual
Space Science and Exploration	2.3	1.7	0.7	0.7	0.5	0.2
Satellite Communications	16.2	7.0	6.0	6.0	3.6	2.4
Total Contributions	18.5	8.7	6.7	6.7	4.1	2.6
Total PA	**18.5**	**8.7**	**6.7**	**6.7**	**4.1**	**2.6**

Notes:

- Due to rounding, figures may not add to totals shown.
- This table details contribution programs with funding in excess of $5 million per annum.

Comment on Variances

CASSIOPE: Program delays due to problems with the development of critical component (DSU) and the move of the launch date from November 2008 to November 2009 due to delays in the development of the Falcon launch vehicle. After detailed reviews of all the mission components, the schedule and milestones were modified to fit the new program schedule and launch date and the cash flow projections were adjusted accordingly.

EPOP: The delays for ePOP were necessitated by the extension of the CASSIOPE schedule and slippage of the launch date, which are beyond the control of the University of Calgary. The schedule extension will require the University of Calgary to stretch instrument test to fit the extended CASSIOPE schedule and maintain the project development teams at the universities and in industry for a longer period. The integration of ePOP with the CASSIOPE spacecraft is MacDonald, Dettwiller and Associates's responsibility, and was performed at Bristol in Winnipeg and at the David Florida Lab in Ottawa. Synchronization of all program elements and activities, including the ePOP payload integration and test, is critical for success.

Significant Audit & Evaluation Findings and URL (s) to the Last and / or Evaluation

The CSA program management office proactively manages technical aspects of the CASSIOPE contribution program. Effective management mechanisms and practices are implemented to ensure progress towards achieving expected technical results at the technology demonstration phase. The risk management mechanisms ensure that technical risks are effectively monitored and mitigated or reduced for all program elements.

The CSA disposes of sufficient authority and resources to ensure effective management of technical aspects of the CASSIOPE contribution program. The existing management mechanisms and practices provide the CSA with high level expertise in satellite communications and ensure effective coordination with the Communications Research Centre. They also ensure effective coordination between the CSA and each of the two recipients, as well as between the two contribution recipients.

Source: http://www.asc-csa.gc.ca/pdf/ar-0607-0102.pdf

3.3.7) Response to Parliamentary Committees and External Audits for Fiscal-Year 2008-2009

Response to Parliamentary Committees
No recommendation was received during the period covered by this report.
Response to the Auditor General
No recommendation was received during the period covered by this report. However, a Status Update for 2006-2007 on the 2002 recommendations was produced. To learn more about the Status Update, go to: http://www.asc-csa.gc.ca/eng/publications/pr-2005_response.asp
External Audits
The Public Service Commission tabled an Audit Report for Calendar Year 2006. To learn more about the Audit Report, go to: http://www.psc-cfp.gc.ca/adt-vrf/rprt/2006/csa-asc/index-eng.htm

3.3.8) Internal Audits and Evaluations (current reporting period)

1. Name of Internal Audit	2. Type	3. Status	4. Completion Date	5. Electronic Link to Report
Auditing of Business Continuity Planning	Management Framework	Completed	January 2009	http://www.asc-csa.gc.ca/eng/publications/ar-0809-0102.asp
Audit of the Design and Operation of the Sampling Plan	Management Framework	Completed	October 2008	http://www.asc-csa.gc.ca/eng/publications/ar-0809-0101.asp
Audit of Staffing Activities and Transactions	Management Framework	Completed	August 2008	http://www.asc-csa.gc.ca/eng/publications/ar-0708-0104.asp

1. Name of Evaluation	2. Program Activity	3. Evaluation Type	4. Status	5. Completion Date	6. Electronic Link to Report
Evaluation of the Class Grant and Contribution Program	All program activities	Summative	Completed	November 2008	http://www.asc-csa.gc.ca/eng/publications/ar-570-2745.asp

3.3.9) Travel Policies

Comparison to the TBS Special Travel Authorities

Travel Policy of the Canadian Space Agency: The Canadian Space Agency follows the TBS Special Travel Authorities.
Authority: N/A
Coverage: N/A
Principal difference(s) in policy provisions: N/A
Principal financial implications of the difference(s): N/A

Comparison to the TBS Travel Directive, Rates and Allowances

Travel Policy of the Canadian Space Agency: The Canadian Space Agency follows the TBS Travel Directive, Rates and Allowances.
Authority: N/A
Coverage: N/A
Principal difference(s) in policy provisions: N/A
Principal financial implications of the difference(s): N/A