

**CANADIAN SPACE AGENCY
2013-14 REPORT ON PLANS AND PRIORITIES**

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Annexe 1 – Details on Transfer Payment Programs (TPPs)

Departmental Plan for Transfer Payment Programs for the Canadian Space Agency

Contribution under the Canada/ESA Cooperation Agreement

Name of Transfer Payment Program: Contributions under the Canada/European Space Agency (ESA) Cooperation Agreement.

Start Date: March 28, 2012 (ratification of the new Agreement)
September 20, 2012 (approval of the revised T&C)

End Date: December 31, 2019 (end date of the new Agreement)

Fiscal Year for Terms and Conditions: 2012-13 - The revised terms and conditions for the contributions under the 2012-19 Cooperation Agreement were approved on September 20, 2012.

Strategic Outcome: Canada's exploration of space, provision of space services and development of its space capacity meet the nation's needs for scientific knowledge, innovation and information.

Future Canadian Space Capacity Program: This Program attracts, sustains and enhances the nation's critical mass of Canadian space specialists, fosters Canadian space innovation and know-how, and preserves the nation's space-related facilities capability. In doing so, it encourages private-public collaboration that requires a concerted approach to future space missions. This Program secures the nation's strategic and ongoing presence in space in the future and to preserve Canada's capability to deliver internationally renowned space assets for future generations. It is targeted at Canadian academia, industry and youth, as well as users of Canadian space solutions (Government of Canada (GoC) organizations) and international partners.

Transfer Payment Program Description: Enhance Canadian industry's technological base and provide access to European markets for value added products and services in the fields of Earth Observation (EO), telecommunications and generic technological activities; foster the participation of Canadian academia and make possible the demonstration of Canadian space technologies in European science and exploration missions. This is achieved through a financial contribution by the CSA to ESA optional programs.

Expected Results (Program Level):

Future Canadian Space Capacity Program: Canada holds a space community (academia, industry and government) able to contribute to the sustained and strategic Canadian use of space.

Expected Results Specific to the Transfer Payment Program:

Successful development and demonstration of advanced technologies, systems, components, and studies provided for in the contracts awarded by ESA to Canadian firms under the following ESA EO programs: EOEP (Earth Observation Envelop Program), GMES (Global Monitoring for Environment and Security) 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 ESA Telecommunications and Navigation programs: ARTES 1, 3-4, 5, 8 and GalileoSat.

Successful development and demonstration of advanced technologies, systems, components, or studies provided for in the contracts awarded by ESA to Canadian firms under Europe's space exploration program Aurora, under the European Transportation and Human Exploration Preparatory Activities program and under the European Physical and Life Science program (ELIPS).

Growing utilization of data obtained from ESA relating to European markets and Earth observation and telecommunications technologies as strategic information for government departments, agencies and industries in Canada.

Because of our participation in Europe's satellite communication, Earth observation and science and space exploration programs, increased demonstration opportunities for space-qualified technologies and products developed by Canadian firms for the space markets are available.

Development of new alliances and/or strengthening of established alliances between Canadian and European companies.

	Forecast Spending 2012-13	Planned Spending 2013-14	Planned Spending 2014-15	Planned Spending 2015-16
Total Contributions (\$ in millions)	23.2	24.9	30.6	34.0
Total Transfer Payments (\$ in millions)	23.2	24.9	30.6	34.0

Notes: 1. This table details contribution programs with funding in excess of \$5 million per annum.
2. Due to rounding, decimals may not add up to totals shown.

Fiscal Year of Last Completed Evaluation: 2005-06

Decision following the Results of Last Evaluation:

The CSA intensified its efforts to renew the Cooperation Agreement to ensure that Canada maintains a presence in European markets.

To meet program requirements, the CSA implemented a well-structured and transparent process for holding consultations with industry to support the selection of and promote optional programs.

The CSA implemented a mechanism for mitigating the risks of exchange rate fluctuations and inflation.

Fiscal Year of Planned Completion of Next Evaluation: 2014-15

General Targeted Recipient Group:

Canadian space sector businesses, universities and not-for-profit research organizations

Initiatives to Engage Applicants and Recipients:

CSA has consulted the Canadian space sector (industry and academia) and relevant GoC organizations as part of the Program selection process in preparation for the 2012 ESA Ministerial Council meeting during which ESA Member states and Canada announced new contributions to the proposed ESA Programs. Such consultations will also be held for subsequent Ministerial Council meetings.

Class Grant and Contribution Program to support Research, Awareness and Learning in Space Science and Technology

Name of Transfer Payment Program: Class Grant and Contribution Program to support Research, Awareness and Learning in Space Science and Technology.

Start Date: October 1st, 2009

End Date: N/A – Ongoing program

Fiscal Year for Terms and Conditions: 2009-10

Strategic Outcome: Canada's exploration of space, provision of space services and development of its space capacity meet the nation's needs for scientific knowledge, innovation and information.

Programs

Space Data, Information and Services Program: This Program includes the provision of space-based solutions (data, information and services) and the progression of their utilization. It also serves to install and run ground infrastructure that processes the data and operates satellites. This Program utilizes space-based solutions to assist Government of Canada (GoC) organizations in delivering growing, diversified or cost effective programs and services within their mandate, which is related to key national priorities, such as sovereignty, defense, safety and security, resource management, environmental monitoring and the North. It also provides academia with data required to perform its own research.

Space Exploration Program: This Program provides valuable Canadian science, signature technologies and qualified astronauts to international space exploration endeavours. This Program contributes to the Government of Canada's Science and Technology Strategy. It fosters the generation of knowledge as well as technological spin-offs that contribute to a higher quality of life for Canadians. It generates excitement within the population in general and contributes to nation building. This Program appeals to the science and technology communities. It is targeted mostly towards Canadian academia and international space exploration partnerships. Canadian industry also benefits from the work generated within this Program.

Future Canadian Space Capacity Program: This Program attracts, sustains and enhances the nation's critical mass of Canadian space specialists, fosters Canadian space innovation and know-how, and preserves the nation's space-related facilities capability. In doing so, it encourages private-public collaboration that requires a concerted approach to future space missions. This Program secures the nation's strategic and ongoing presence in space in the future and to preserve Canada's capability to deliver internationally renowned space assets for future generations. It is targeted at Canadian academia, industry and youth, as well as users of Canadian space solutions (Government of Canada (GoC) organizations) and international partners.

Transfer Payment Program Description: This program supports knowledge growth and innovation in the Canadian Space Agency's (CSA) priority areas while increasing the awareness and participation of Canadians in space-related disciplines and activities. The program has two components: a) Research and b) Capacity Building.

The Research component aims to support the development of science and technology; foster the continual development of a critical mass of researchers and highly qualified people in Canada; and, support information-gathering and, space-related studies and research pertaining to Canadian Space Agency priorities.

The Capacity Building component aims to provide learning opportunities to Canadian students and physicians in various space-related disciplines; to support the operations of organizations dedicated to space research and education; and to increase awareness of Canadian space science and technology among Canadian students and their participation in related activities. It should be noted that the CSA recently conducted a review of all of its programs. As a result of this review, the CSA will no longer support financially initiatives under the Awareness and Learning component aimed at elementary and secondary students.

Expected Results (Program Level):

Space Data, Information and Services Program: Government of Canada organizations offer more diversified or cost-effective programs and services due to their utilization of space-based solutions.

Space Exploration Program: Expansion of scientific knowledge acquired; and multiple use and applications of knowledge and know-how acquired through space exploration endeavours.

Future Canadian Space Capacity Program: Canada holds a space community (academia, industry and government) able to contribute to the sustained and strategic Canadian use of space.

Expected Results Specific to the Transfer Payment Program:

1. Research Component

- Increased knowledge from research projects in priority space science and technology areas.
- Maintained and/or increased space focus in universities, post-secondary institutions, and not-for-profit organizations.
- Partnerships established and/or sustained.
- Leveraged partner contributions.
- Access to international collaboration for Canadian organizations.

2. Capacity Building Component

- Increased availability and use of the space theme in learning opportunities and materials related to science and technology at the university level.
- Post-secondary level and physicians will have increased knowledge and skills in space-related disciplines.

	Forecast Spending 2012-2013	Planned Spending 2013-2014	Planned Spending 2014-2015	Planned Spending 2015-2016
Total Grants (\$ in millions)	6.1	6.4	6.5	6.6
Total Contributions (\$ in millions)	1.5	2.1	1.3	1.2
Total Transfer Payments (\$ in millions)	7.6	8.4	7.7	7.8

Notes: 1. This table details contribution programs with funding in excess of \$5 million per annum.
2. Due to rounding, decimals may not add up to totals shown.

Fiscal Year of Last Completed Evaluation: N/A

Decision following the Results of Last Evaluation: N/A

Fiscal Year of Planned Completion of Next Evaluation: 2014-2015

General Targeted Recipient Group:

Eligible recipients for Grants:

Research Component include Canadian universities and post-secondary institutions, not-for-profit organizations established and operating in Canada and not-for-profit international research organizations or a cluster formed by a combination of the above.

Capacity Building Component include Canadian citizens or permanent residents of Canada, post-secondary institutions, not-for-profit organizations established and operating in Canada, and international organizations dedicated to space relevant education.

Eligible recipients for Contributions:

Research Component include Canadian universities and post-secondary institutions, for-profit and not-for-profit organizations established and operating in Canada, and not-for-profit international research organizations or a cluster formed by a combination of the above.

Capacity Building Component include Canadian post-secondary institutions, not-for-profit organizations established and operating in Canada, and international organizations dedicated to space relevant education.

Initiatives to Engage Applicants and Recipients:

An initiative to engage recipients has been undertaken since 2012 through an automated annual follow-up of projects. Based on this pilot, the Agency is extending this experience in 2013-2014 to open a dialogue with potential applicants as well as recipients via its web site.

Consultations, presentations and discussions with the academic community and other potential recipient groups are ongoing and will continue.

Disclosure of Transfer Payment Programs under \$5 million

Name of TPP	Main Objective	End Date of TPP	Type of TP (G,C)	Planned Spending for 2013-14 (\$ in millions)	Fiscal Year of Last Completed Evaluation	General Targeted Recipient Group
CASSIOPE Contribution Program: ePOP Program Element (voted)	The main objective of this program element is to acquire fundamental new knowledge relating to the dynamics of the Earth's space plasma environment, its effects on radio wave propagation, and its link between the Sun and the Earth's climate.	March 31 st , 2015	C	0.3	2009-10	Incorporated not-for-profit organization, namely the University of Calgary, Alberta.

Annexe 2 – Sources of Respendable and Non-Respendable

A. Respendable Revenue (\$ in millions)

Program Activity	Forecast Revenue 2012-2013	Planned Revenue 2013-2014	Planned Revenue 2014-2015	Planned Revenue 2015-2016
Respendable Revenue	-	-	-	-
Total Respendable Revenue	-	-	-	-

B. Non-Respendable Revenue (\$ in millions)

Program Activity	Forecast Revenue 2012-2013	Planned Revenue 2013-2014	Planned Revenue 2014-2015	Planned Revenue 2015-2016
Space Data, Information and Services				
Royalties from activities related to the RADARSAT Program	0.9	0.9	1.0	1.0
Future Canadian Space Capacity	3.0	2.8	3.5	1.5
Revenue of Royalties from intellectual property/Testing Facilities and Services of the David Florida Laboratory				
Internal Services	0.3	0.3	0.3	0.3
Miscellaneous Revenues				
Total Non-Respendable Revenue	4.2	4.0	4.8	2.8
Total Respendable and Non-Respendable Revenue	4.2	4.0	4.8	2.8

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

Annexe 3 – Status Report on Transformational and Major Crown Projects

RADARSAT Constellation Mission

1- Description

The RADARSAT Constellation Mission (RCM) is the follow-on to RADARSAT-1 and 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 Mission 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 launch of the constellation is planned to occur in fiscal year 2018-19. With a constellation, the time between successive imaging of a specific point on 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 remaining tandem would 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 RCM Major Crown Project includes the requirement definition, 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 Mission 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, RCM 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, RCM can provide high resolution (3 m), all-weather 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, volcano eruptions, earthquakes and hurricanes.

In support of ecosystem monitoring of Natural Resources Canada, Environment Canada, Parks Canada and Agriculture and Agri-foods Canada, the RCM will be a critical source of information for agriculture, forestry, changes in the permafrost in the northern Canada and wildlife habitat. RCM 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 Mission sustains development of 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.

Leading and participating Departments and Agencies

Sponsoring Agency:	Canadian Space Agency
Contracting Authority:	Public Works and Government Services Canada (PWGSC)
Participating Departments:	Department of National Defence Department of Fisheries and Oceans Agriculture and Agri-foods Canada Environment Canada Natural Resources Canada Public Safety Canada Department of Foreign Affairs and International Trade Industry Canada Transport Canada Aboriginal Affairs and Northern Development Canada Parks Canada

Prime and Major Sub-Contractors

Prime Contractor: MDA Systems Ltd (a division of MacDonal, Dettwiler and Associates (MDA))	- Richmond, British Columbia
Major Sub-Contractors: - MacDonal, Dettwiler and Associates - Magellan Aerospace - EADS, Astrium - MacDonal, Dettwiler and Associates - Space X Canadian Tier 2 and Tier 3 Subcontractors: - COMDEV Limited - SED Systems - EADS, Composites Atlantic - IMP Group - DRS - Lemex - STMicroelectronics Canada - Maya	- Ste.-Anne-de-Bellevue, Québec - Winnipeg, Manitoba - Stevenage, United Kingdom - Halifax, Nova Scotia - Hawthorne, California, USA - Cambridge, Ontario - Saskatoon, Saskatchewan - Lunenburg, Nova-Scotia - Halifax, Nova-Scotia - Ottawa, Ontario - Brossard, Quebec - Mississauga, Ontario - Montreal, Quebec

Major Milestones

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

Phase	Major Milestones	Date (at completion)
A	Requirement Definition	March 2008
B	Preliminary Design	March 2010
C	Detailed Design Review	November 2012
D	Launch satellite #1, #2, and #3	2018-19
E1	Operations (part of MCP)	2019-20
E2	Operations (not part of MCP)	2019 to 2025

Progress Report and Explanation of Variances

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

On June 6, 2005, Treasury Board granted Preliminary Project Approval (PPA) for the RADARSAT Constellation Mission and expenditure authority for the Project Initial Planning and Identification (Phase A). During Phase A, feasibility studies were finalized, user requirements were defined, and risk mitigation activities and options analysis for the

bus and payload were performed. The initial scope of work of Phase A 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 Preliminary Project Approval Treasury Board Submission to proceed to Phases B and C was approved in March 2007. Following a competitive Request for Proposal (RFP) process, PWGSC obtained authority to enter into a contract with the Prime Contractor, MDA and the contract for Phase B was awarded to MDA in November 2008. The Preliminary Design (Phase B) was completed in March 2010. The contract for Phase B was subsequently amended to include the detailed design (Phase C).

A second revised Preliminary Project Approval was approved by Treasury Board in December 2010. The purpose of this revised PPA was to provide additional expenditure authority to include the procurement of long-lead items during Phase C and also to include a technology demonstration program for the Department of National Defence funded Automatic Identification System payload.

The final review of the overall mission-level system detailed design, the Mission Critical Design Review (CDR), occurred in November 2012 and marked the completion of the detailed design of the RADARSAT Constellation Mission. This milestone was achieved with a one-month delay with respect to previous planning. The delay was due to technical challenges in the detailed design of the bus and payload sub-systems. A selected set of activities are being pursued on Phase C such as closing actions resulting from the design reviews until March 2013 and the procurement of long-lead items which will carry on in fiscal year 2013-14.

In November 2012, Public Works and Government Services Canada (PWGSC) successfully completed the negotiation of a firm-fixed price contract with MDA for the manufacturing (Phase D) and initial operation (Phase E1) of RCM. Treasury Board granted Effective Project Approval for RCM in December 2012, which provides expenditure and contracting authorities to complete the project and perform the first year of operations of RCM. The contract for Phase D and E1 (manufacturing and initial operations) was awarded on 9 January 2013.

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 March 31, 2012, the CSA has funded over \$146.2 million worth of work to Canadian industry directly attributable to the design of RADARSAT Constellation Major Crown Project.

Regarding the Canadian content and the distribution of contracts within Canada, the prime contract includes a requirement for 70% Canadian content, excluding launch services and sub-systems for which there are no suppliers available in Canada. The Prime contractor is also required to apply CSA's overall regional distribution targets on a "best efforts" basis. In addition, considering the past difficulty in achieving the targets in Atlantic Canada, a minimum requirement of 3.5% of the 70% Canadian content has been set for that region. This objective was met in March 2012. The prime contract includes reporting obligations and performance measures as well as financial penalties for not meeting the minimum Atlantic Canada content. CSA works closely with the Atlantic Canada Opportunities Agency (ACOA) to monitor regional distribution achievements and to support the prime contractor in the delivery of the given targets.

Regional Distribution of RADARSAT Constellation Mission Contracts to Canadian Industry (\$ in millions) (As of March 31st, 2012)

	British Columbia	Prairies	Ontario	Quebec	Atlantic Provinces	Total Canada
Targets (%)	10%	10%	35%	35%	10% (3.5 % min.)*	100%
Actual (%)	28.5%	12.6%	21.2%	35.2%	2.5%*	100%
Actual	41.64	18.46	30.97	51.41	3.71	146.19

* The absolute Canadian Content requirement for the Atlantic Canada Region is of 2.45% of the total contract value (3.5% of the 70% Canadian Content Requirement). As of March 2012 this contractual requirement has been met since 2.5% of the total contract value has been achieved in the Atlantic Canada region. This 2.5% corresponds to 3.57% of the 70% Canadian Content Requirement.

Summary of Non-Recurring Expenditures (\$ in millions) (Forecasts to March 31, 2013)

Program	Current Estimated Total Expenditure	Forecast to March 31, 2013	Planned Spending 2013-14	Future Years
RADARSAT Constellation Mission	1083.9	316.4	240.0	527.4

James Webb Space Telescope

1- 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 field-aperture telescope to be located 1.5 million km from Earth. Like Hubble, the JWST will be used by the astronomy community to observe targets ranging 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. It is 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 scheduled for launch in 2018. 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 sun shield that will be the size of a tennis court once deployed in outer space.

Canada is providing the Fine Guidance Sensor (FGS) and Near Infra-Red Imager and Slitless Spectrometer (NIRISS). The NIRISS instrument replaces the Tuneable Filter Imager (TFI) originally planned. 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 Near Infra-Red Imager and Slitless Spectrometer covers the 0.7 to 5 micrometers spectral range. NIRISS provides a specialized capability for surveys of objects such as primeval galaxies, for the study of transiting planetary systems and for high-contrast imaging applications such as the detection of extra-solar planets.

Developed in partnership with COM DEV Canada, the JWST-FGS Major Crown Project consists of the design, development, integration and testing and integration into the spacecraft, launch and commissioning of the Fine Guidance Sensor and Near Infra-Red Imager and Slitless Spectrometer. 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 National Science Infrastructure (NSI), formerly known as 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 National Science Infrastructure Industry Canada

Prime and Major Sub-Contractors

Prime Contractor: - COM DEV Canada	 - Ottawa, Ontario
Major Sub-Contractors: <ul style="list-style-type: none"> - Teledyne - Corning Netoptix - IMP Aerospace Avionics - ABB Bomem - MDA - INO - BMV - CDA - ESTL - Bach Research Corporation - Materion - Camcor 	<ul style="list-style-type: none"> - U.S. - U.S. - Canada - Canada - Canada - Canada - Canada - U.S. - Europe - U.S. - U.S. - Canada

Major Milestones

The major milestones, by phase, are the following:

Phase	Major Milestones	Date
A	Requirement Definition	2003-04
B	Preliminary Design	August 2004 to May 2005
C	Detailed Design	July 2005 to September 2008
D	Manufacturing/Assembly; Integration/Testing; Pre-launch preparations, Launch/System Commissioning	May 2007 to April 2019
E	Operations	2019 to 2024

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. In February 2007, Treasury Board granted Effective Project Approval for a substantive total cost estimate of \$98.4 million 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.

In March 2007, the first Critical Design Review (CDR) for the guider function of the FGS, revealed some technical issues which required additional effort to resolve. This Review took place after the Effective Project Approval (EPA) received in February 2007. During 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.

On December 2007, Treasury Board granted a revised Effective Project Approval (EPA) of \$151.0 million after the CSA encountered a significant cost growth at the end of the detail design phase.

Over this reporting period, the Proto Flight Model FGS successfully completed a very stringent environmental test campaign during which the instrument was subjected to cryogenic temperatures over a period of 80 continuous days. The NIRISS instrument was completed and tested and then integrated on the optical assembly of the FGS.

On July 30, 2012, the Proto Flight Model FGS/NIRISS was delivered to NASA Goddard Space Flight Center. On November 15, 2012, it was officially accepted by NASA following the successful completion of post delivery functional checks. The FGS/NIRISS was the first instrument officially accepted by NASA as part of the JWST project. Since then, the Proto Flight Model FGS has been undergoing pre-integration tests in preparation for integrated science instrument module (ISIM) environmental test campaign planned to start in fiscal year 2013-14.

Industrial Benefits

As of March 31, 2012, the CSA has funded close to \$108.4 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 NIRISS 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 to Canadian Industry (\$ in millions) (As of March 31, 2012)

	Ontario	Quebec	Atlantic Provinces	Total Canada
Actual (%)	90%	8.3%	1.7%	100%
Actual	97.7	9.0	1.8	108.4

Summary of Non-Recurring Expenditures (\$ in millions) (Forecasts to March 31, 2013)

Program	Current Estimated Total Expenditure	Forecast to March 31, 2013	Planned Spending 2013-14	Future Years
JWST-FGS and TFI	151.0	149.2	0.9	0.9

Annexe 4 – Summary of Capital Spending by Program

Programs (\$ in millions)	Forecast Spending 2012-13	Planned Spending 2013-14	Planned Spending 2014-15	Planned Spending 2015-16
Space Data, Information and Services	101.0	250.8	198.2	128.0
Space Exploration	28.2	18.0	25.7	41.1
Future Canadian Space Capacity	2.4	1.8	1.5	1.5
Internal Services	4.7	2.1	2.1	2.0
Total Capital Spending	136.3	272.7	227.4	172.7

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

Annexe 5 – Upcoming Internal Audits and Evaluations over the next three fiscal years

Audits

Name of Internal Audit	Type	Status	Completion Date	Electronic Link to Report
Advanced Exploration Technology Development Program – Economic Action Plan	Management Framework	Planned	November 2013	N/A
Corporate Office of Project management	Management Framework	Planned	March 2014	N/A
OCG Horizontal Audit of Financial Forecasting	Management Framework	Planned	March 2014	N/A
OCG Horizontal Audit of the Compliance with the Workforce Adjustment Directive	Compliance / Management Framework	Planned by OCG	March 2014	N/A
Elaboration Process of the Investment Plan	Compliance / Management Framework	Planned	March 2014	N/A
Governance Processes (monitoring and review of priorities)	Management Framework	Planned	March 2014	N/A
Space Astronomy Missions and Planetary Missions Programs	Management Framework	Planned	March 2014	N/A
Satellite Operations Program	Compliance / Management Framework	Planned	March 2015	N/A
OCG Horizontal Audit of the Efficiency of Procurement and Contracting Practices	Management Framework	Planned by OCG	March 2015	N/A
Contracting and Acquisition Management	Management Framework	Planned	March 2015	N/A
Earth Observation Missions Program – RCM	Management Framework	Planned	March 2015	N/A
IT Security	Management Framework	Planned	March 2015	N/A
The Risk Based Audit Plan is presently under revision; therefore, the audits that will be undertaken in fiscal year 2015-16 have not yet been identified.				

Evaluations

Name of Evaluation	Program	Status	Completion Date	Electronic Link to Report
Advanced exploration technology development	1.2.2.3	In progress	March 2014	N/A
Evaluation of Scientific Missions and Scientific Data utilization programs	1.1.1.3 / 1.1.3.3	Planned	March 2014	N/A
Evaluation of Class Grant and Contribution Program to support Research, Awareness and Learning in Space Science and Technology	1.3.1	Planned	March 2015	N/A
Evaluation of ISS Assembly and Maintenance Operations program	1.2.1.1	Planned	March 2016	N/A
Space Astronomy missions	1.2.2.1	Planned	March 2016	N/A
Evaluation of International Market Access Program	1.3.2.1	Planned	March 2016	N/A
Evaluation of Earth Observation Missions Program	1.1.1.1	Planned	March 2017	N/A
The Five-Year Evaluation Plan is presently under revision; therefore, the evaluations that will be undertaken in fiscal year 2017-18 have not yet been identified.				