

REGULATION OF SPACE ACTIVITIES IN CANADA

by

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Abstract: *The space regulatory regime in Canada is, in many ways, unique in the world. Federal government has jurisdiction over all space matters and has essentially been adapting its existing laws, with a minor exception, in order to regulate Canadian space activities as they have been developed over a period of four decades. This paper describes several Canadian laws and regulations, particularly those that relate to space research and development, launch activities, satellite communications, remote sensing from space, human space flight, and military uses of outer space.*

INTRODUCTION

Though Canada became the third country in the world to design and to build its own satellite when it launched the Alouette I research satellite in 1962, yet it is not a major space power. Canada's space program, in a number of ways, is unique as it has primarily been designed to serve specific domestic needs of the country, which is the second largest in the world, in geographical terms and has a population of only about 32 millions, inhabiting a horizontal corridor of 200 kilometers in width along the US border.

In Canada, the space industry, though small, is an important economic activity. From the perspective of space activities undertaken and revenues generated, Canada can be considered to be a medium size space power. Canada's space industry generated \$2 billion in revenues in 2003. "A breakdown of the revenues by sectors of activity is as follow: Telecommunications: 72.4% (\$1.45 billion); Earth Observation: 9.2% (\$184 million); Navigation: 8.2% (\$164 million);

Robotics 5.8% (\$116 million); Space Science 3.1% (\$62 million); and, all space-related activities in areas other than those mentioned above 1.3% (\$26 million).¹

Canada has ratified several international treaties that govern outer space activities,²

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¹ *Report on Plans and Priorities, 2005-2006 Estimates*, available at <http://www.space.gc.ca/asc/eng/resources/publications/rpp-2005.asp#section1-1> (accessed 20 September 2005).

² Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies (hereinafter referred to as the Outer Space Treaty); opened for signature on 27 January 1967, entered into force on 10 October 1967; 18 UST 2410, TIAS 6347, 610 UNTS 205; The Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (the "Rescue Agreement," adopted by the General Assembly in its resolution 2345 (XXII)), opened

with the exception of the 1979 Moon Agreement.³ These treaties have been implemented in Canada in the form of various dedicated laws or by making minor modifications to existing laws. Therefore, national space law in Canada is a collection of a few specific laws exclusively regulating certain aspects of space activities as well as a web of numerous laws and regulations of general application which have been amended and adapted to cover several aspects of space activities.

This paper briefly describes several Canadian laws and regulations, particularly those that relate to space research and development, launch activities, satellite communications, remote sensing from space, human space flight, and military uses of outer space. Such description is

for signature on 22 April 1968, entered into force on 3 December 1968; 19 UST 7570, TIAS 6599, 672 UNTS 119. The Convention on International Liability for Damage Caused by Space Objects (the "Liability Convention," adopted by the General Assembly in its resolution 2777 (XXVI)), opened for signature on 29 March 1972, entered into force on 1 September 1972; 24 UST 2389, TIAS 7762, 961 UNTS 187; The Convention on Registration of Objects Launched into Outer Space (the "Registration Convention," adopted by the General Assembly in its resolution 3235 (XXIX)), opened for signature on 14 January 1975, entered into force on 15 September 1976; 28 UST 695, TIAS 8480, 1023 UNTS 15; the Charter of the United Nations, 26 June 1945; Constitution and Convention of the International Telecommunication Union with Annex, 1994 (as amended in Marrakesh in 2004) and ITU Radio Regulations, Edition of 2004; Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water, 5 August 1963, 14 UST 1313, TIAS 5433, 480 UNTS 43; etc.

³ *The Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*, adopted by the General Assembly in its resolution 34/68, opened for signature on 18 December 1979, entered into force on 11 July 1984.

provided with a view to present the Canadian approach to space law-making so that it could possibly serve as a model for like-minded countries.

FEDERAL JURISDICTION OVER SPACE ACTIVITIES

Unlike countries that have a single-document federal Constitution, Canada's constitution derives not only from a set of enactments known as Constitution Acts, but also a set of unwritten conventions. Under the *British North America Act* of 1867,⁴ the British Parliament united the four existing Canadian colonies into a confederation of Provinces and also enacted provisions dealing with the distribution of legislative authority between the Dominion Parliament and the Provincial Legislatures.⁵ As a result, in order to determine the appropriate legislature under whose jurisdiction the regulation of space activities in Canada falls, one must return to the basic provisions of the Constitution Acts.

Following the scheme established by the Constitution Act of 1867, Canada at present has a federal legislature (Parliament) and ten provincial legislatures. As regards the distribution of legislative power between the federal and provincial legislatures, sections 91 and 92 of the *British North America Act*, 1867 are the relevant provisions. Section 91 provides as follows:

"It shall be lawful for the Queen, by and with the Advice and Consent of

⁴ *British North America Act*, 1867, 30-31 Victoria, c. 3. Also known as the *Constitution Act*, 1867.

⁵ James P. Kay, *The Organization of Space Activities in Canada* (Montreal: Center for Research of Air and Space Law, McGill University, 1980) at 1.

the Senate and House of Commons, to make laws for the *Peace, Order, and good Government of Canada*, in relation to *all Matters not coming within the Classes of Subjects by this Act assigned exclusively to the Legislatures of the Provinces*; and for greater Certainty, but not so as to restrict the Generality of the foregoing Terms of this Section, it is hereby declared that (notwithstanding anything in this Act) the exclusive Legislative Authority of the Parliament of Canada extends to all Matters coming within the Classes of Subjects next hereinafter enumerated; that is to say, - ...”⁶

The effect of this provision was to give the federal parliament jurisdiction over all classes of subjects over which exclusive jurisdiction had not been conferred upon the provincial legislatures. Further, section 91 specifically prescribes certain classes of subjects over which the federal Parliament has exclusive legislative authority.⁷ The list obviously does not include space activities as one of the classes of subjects.

Section 92, on the other hand, contains a list of classes of subjects over which the power to legislate is exclusively entrusted to provincial legislatures. Needless to say, the list in this section also does not include space activities as one of the classes of subjects.⁸ It might therefore appear that the regulation of space activities in Canada falls neither within the realm of the federal nor provincial legislatures. However, the general clause in section 91 provides basis

⁶ *British North America Act*, 1867, section 91 [emphasis added]. The provision also contains a list of classes of subjects over which the federal Parliament has exclusive legislative authority.

⁷ *Ibid.*

⁸ *Ibid.* section 92.

for the assertion that the federal Parliament in Canada has jurisdiction to regulate space activities. Since legislative authority over space activities has not been exclusively assigned to provincial legislatures, it follows that they are within the jurisdiction of the federal legislature.

It must also be kept in mind that under section 92(10), the Parliament of Canada may enact legislation bringing wholly local works within its jurisdiction by declaring them for the General Advantage of Canada.

In the past, courts have recognized the exclusive legislative jurisdiction of the federal Parliament in areas, which were not mentioned in the Constitution Act, like aeronautics,⁹ radiocommunications,¹⁰ telecommunications¹¹ and broadcasting both with respect to the carriage and contents,¹² etc. In reaching their decisions in these cases, the courts were guided by the provision of "peace, order and good government" of section 91, the provision relating to local works be declared of 'General Advantage to Canada' of section 92 (1), the necessity of implementing international treaty obligations, and the test of functional integrity thus avoiding divided jurisdiction. Therefore, like aeronautics and radio frequencies, satellites do not respect political borders and must be considered to have completely

⁹ *Re Aerial Navigation, A.-G. Can. V A.-G. Ont.* [1932] 1 D.L.R. 58, [1931] 3 W.W.R. 625, [1932] A.C. 54.

¹⁰ *Re Regulation and Control of Radio Communication*, [1932] A.C. 304.

¹¹ *Alberta Government Telephones v. Canadian Radio-television and Telecommunications Commission*, [1989] 2 S.C.R. 225.

¹² *Capital Cities Communication Inc. v. Canada [Radio-television and Telecommunications Commission]*, [1978] 2 S.C.R. 141.

been covered by international agreements. Therefore, outer space activities are within the exclusive jurisdiction of the federal Parliament and there is no room for separate provincial jurisdiction over space matters.

The federal Parliament of Canada has exercised, without any constitutional challenge, legislative authority over the regulation of space activities in Canada, particularly in the areas of telecommunications and broadcasting by satellite, e.g. *Broadcasting Act*,¹³ *Telecommunications Act*,¹⁴ *Telesat Canada Act*,¹⁵ *Teleglobe Canada Act*,¹⁶ *Canadian Space Agency Act*,¹⁷ etc.

It can be said that the federal Parliament (Government) has exclusive jurisdiction over all space matters and has essentially been adapting its existing laws, with a minor exception, in order to regulate Canadian space activities as they have been developing over a period of four decades.

SPACE RESEARCH AND DEVELOPMENT

After several studies, Canada decided to establish a single governmental entity, known as the Canadian Space Agency (CSA) in 1989, to coherently implement the Canadian Space Program.¹⁸ The main

¹³ *Broadcasting Act*, S.C. 1991, c. 11.

¹⁴ *Telecommunications Act*, S.C. 1993, c. 38.

¹⁵ R. S. 1985, c. T-6.

¹⁶ S.C. 1987, c.12

¹⁷ S.C. 1990, c. 13.

¹⁸ *Canadian Space Agency Act* (An Act to establish the Canadian Space Agency and to provide for other matters in relation to space), Chapter C-23.2 (1990, c. 13). (hereinafter referred to as the CSA Act).

objects of the CSA “are to promote the peaceful use and development of space, to advance the knowledge of space through science and to ensure that space science and technology provide social and economic benefits for Canadians.”¹⁹

The CSA undertakes all space research activities as it has been mandated to (a) plan, direct, manage and implement programs and projects relating to scientific or industrial space research and development and the application of space technology; (b) promote the transfer and diffusion of space technology to and throughout Canadian industry; and (c) encourage commercial exploitation of space capabilities, technology, facilities and systems.²⁰ The Agency reports to the Canadian Parliament through the Minister of Industry²¹ who is also responsible for the design and implementation of Canadian space policy, programs and projects. The Agency is headed by a President, who is its chief executive officer, and “under the direction of the Minister, has control and supervision over the work, officers and employees of the Agency.”²²

The Agency’s five core functions relate to Space Programs, Space Technologies, Space Science, Canadian Astronaut Office, and Space Operations. With an annual budget of only \$341.6 million for the year 2005-2006 and a work force of 641 employees,²³ the CSA is considered to be

¹⁹ *Ibid*, section 4.

²⁰ *Ibid*, section 5 (2).

²¹ *Order Designating the Minister of Industry, Science and Technology as Minister for Purposes of the Act*, SI/93-229 (15 December, 1993).

²² The CSA Act, section 12 (2)

²³ *Report on Plans and Priorities, 2005-2006 Estimates*, available at <http://www.space.gc.ca/asc/>

one of the most efficient space agencies in the world.

LAUNCH ACTIVITIES

Launch activities in Canada are regulated under the Canadian Aeronautics Act²⁴ and the Canadian Aviation Regulations issued pursuant to the Act. Everyone in Canada is prohibited to “launch a rocket, other than a model rocket or a rocket of a type used in a fireworks display, except in accordance with an authorization issued by the Minister” of Transport.²⁵ Moreover, there is general prohibition about the launch of “a model rocket or a rocket of a type used in a fireworks display into cloud or in a manner that is or is likely to be hazardous to aviation safety.”²⁶ According to section 3 (1) of the Aeronautics Act “aircraft” means “...any machine capable of deriving support in the atmosphere from reactions of the air, other than a machine designed to derive support in the atmosphere from reactions against the earth's surface of air expelled from the machine, and includes a rocket”. And “rocket”, has been defined as “a projectile that contains its own propellant and that depends for its flight on a reaction set up by the release of a continuous jet of rapidly expanding gases”. The Minister may issue the requested authorization where the “launch of the rocket is in the public interest and is not likely to affect aviation safety.”²⁷

eng/resources/publications/rpp-2005.asp#section1-1 (accessed 20 September 2005).

²⁴ Aeronautics Act (An Act to authorize the control of aeronautics), R.S. 1985, c. A-2.

²⁵ Canadian Aviation Regulations, section 602.43.

²⁶ Canadian Aviation Regulations, section 602.45.

²⁷ Canadian Aviation Regulations, section 602.44.

The Canadian Department of Transport (Transport Canada) is responsible for the implementation of the Aeronautics Act, including the launch of rockets. In order to procure a launch license, an application needs to be made to Transport Canada whose Launch Safety Office reviews requests for launch authorizations.²⁸ A launch authorization is issued “if Transport Canada is satisfied that adequate measures are in place that deal with the safety of the launch. The authorization may also contain some additional conditions to enhance launch safety.”²⁹

On 1st October 2004, Transport Canada approved the application from the Orva Space Group, also known as the da Vinci team, for a suborbital launch,³⁰ so that it could compete in the international suborbital space race competition sponsored by the *Ansari X Prize*.³¹

²⁸ “Launch Safety Office” at <http://www.tc.gc.ca/civilaviation/general/LSO/menu.htm> (accessed 02 September 2005).

²⁹ *Ibid.*

³⁰ Transport Canada, News Release (No. H054/04), *da Vinci Team Application Approved by Transport Canada*, October 1, 2004, available at <http://www.tc.gc.ca/mediaroom/releases/nat/2004/04-h054e.htm> (accessed 2 September 2005). The approval was granted subject to several conditions, including, “establishing security controls to protect the public during the launch; wind restrictions for safe balloon and rocket launches; visibility requirements of at least 5 kilometers; inclusion of a tracking device for speed and direction monitoring; mission control staff's awareness of notification and communications requirements; having a range safety officer present to coordinate safety procedures; and, compliance with the conditions in the flight manual:” *ibid.*

³¹ Tariq Malik, “Launch Deadlines Won't Cancel Private Spaceflight, Canadian Says”, posted: 22 October 2004, available at http://www.space.com/missionlaunches/davinci_update_041022.html (accessed 02 September 2005).

Canada has decided not to develop any major launch vehicles on its own and thus currently there is no launch activity carried out in Canada.

SATELLITE COMMUNICATIONS

The 1968, the Canadian Government's White Paper entitled *A Domestic Satellite Communications System for Canada*, concluded that "in view of Canada's particular geographic, economic and social features, '.... a domestic satellite communications system is of vital importance for the growth, prosperity and unity of Canada, and should be established as a matter of priority.'"³² This policy objective was achieved when The *Telesat Canada Act*³³ was passed and proclaimed to be effective on 1st September 1969. Under this Act, Telesat Canada Corporation was created "to establish satellite telecommunication systems providing, on a commercial basis, telecommunication services between locations in Canada," (section 5.1). Canada became the first country in the world to operate a geostationary orbit commercial domestic communications satellite system when it launched its Anik-A 1 in 1972. Since then, communications satellites have been owned and operated by Telesat Canada. In 1991, *Telesat Canada Act* was replaced by the *Telesat Canada Reorganization and Divestiture Act*³⁴ when the company was privatized. Satellites play an important role in the provision of modern communication services of all kinds and in achieving almost 100% teledensity in the country.

³² Cited from: *The Creation of Telesat Canada*, Online Journal of Space Communications, available at http://satjournal.tcom.ohiou.edu/Issue4/historal_telesat.html (accessed 20 September 2005).

³³ R. S. 1985, c. T-6.

³⁴ S.C. 1991, c. 52.

Communications in Canada are regulated under three principal laws, which have been slightly and appropriately amended and adapted to cover all sorts of satellite communications. They are: (a) *Radiocommunication Act*,³⁵ (b) *Telecommunications Act*,³⁶ and (c) *Broadcasting Act*.³⁷

The *Radiocommunication Act* is implemented by the Department of Industry (i.e. Industry Canada) which imposes licensing requirements for the use of radio frequencies for all wireless communications, including satellite communications. The Act applies within Canada and to any spacecraft that is under the direction or control of (a) Her Majesty in right of Canada or a province, (b) a citizen or resident of Canada, or (c) a corporation incorporated or resident in Canada.³⁸ Section 4 (1) of the Act specifies that "No person shall, except under and in accordance with a radio authorization [from the Minister of Industry], install, operate or possess radio apparatus, other than (a) radio apparatus exempted by or under," *Radiocommunication*

³⁵ R.S. 1985, c. R-2, s. 1; 1989, c. 17, s. 2.

³⁶ S.C. 1993, c. 38. 1998, c. 8.

³⁷ S.C. 1991, c. 11. It is also interesting to note that Criminal Code (R.S. 1985, c. C-46) in its section 327 (1) provides that "Every one who, without lawful excuse, the proof of which lies on him, manufactures, possesses, sells or offers for sale or distributes any instrument or device or any component thereof, the design of which renders it primarily useful for obtaining the use of any telecommunication facility or service, under circumstances that give rise to a reasonable inference that the device has been used or is or was intended to be used to obtain the use of any telecommunication facility or service without payment of a lawful charge therefor, is guilty of an indictable offence".

³⁸ *Radiocommunication Act*, section 3(3)(b).

*Regulations.*³⁹ "Radio apparatus" is defined in section 1 of the Act as "a device or combination of devices intended for, or capable of being used for, radiocommunication."

Section 9 (1) (c) of the *Radiocommunication Act* prohibits any one to "decode an encrypted subscription programming signal or encrypted network feed otherwise than under and in accordance with an authorization from the lawful distributor of the signal or feed." Upholding the validity of section 9(1)(c), the Supreme Court of Canada unanimously ruled in *Bell ExpressVu Limited Partnership v. Rex* (2002)⁴⁰ that the sale of equipment to decode encrypted US satellite TV signals is illegal. This decision seems to have put a lid on the so-called grey market in which several companies sold to thousands of Canadians specially designed equipment to unscramble signals from the US direct-to-home satellites so they could watch American TV programs without paying the Canadian distributors of such programs. The Royal Canadian Mounted Police (RCMP) enforces section 9(1)(c) by confiscating illegal equipment. Such actions of RCMP have been appreciated by the Coalition Against Satellite Signal Theft (CASST), according to which "this serious illegal activity takes over \$400 million a year from the Canadian broadcasting system."⁴¹

³⁹ Radiocommunication Regulations (2002), i.e. Regulations respecting radiocommunication, radio authorizations, exemptions from authorizations and the operation of radio apparatus, radio-sensitive equipment and interference-causing equipment (SOR/96-484) as amended by SOR/97-266 SOR/98-189 SOR/98-437 SOR/99-107 SOR/99-108 SOR/00-78 SOR/01-533.

⁴⁰ [2002] 2 S.C.R. 559.

⁴¹ *CASST Applauds RCMP Efforts to Stop Satellite Signal Theft*, (Ottawa, 11 February 2005), available

Telecommunications Act and *Broadcasting Act* are implemented by a single independent regulatory authority known as the Canadian Radio-television and Telecommunications Commission (CRTC), which has been created under the *Canadian Radio-television and Telecommunications Commission Act*.⁴² No general license is required to provide satellite communications services in Canada. However, only a "Canadian carrier is eligible to operate as a telecommunications common carrier if it is a Canadian-owned and controlled corporation incorporated or continued under the laws of Canada or a province."⁴³ According to section 16 (3) of the *Telecommunications Act*, "a corporation is Canadian-owned and controlled if (a) not less than eighty per cent of the members of the board of directors of the corporation are individual Canadians; (b) Canadians beneficially own, directly or indirectly, in the aggregate and otherwise than by way of security only, not less than eighty per cent of the corporation's voting shares issued and outstanding; and (c) the corporation is not otherwise controlled by persons that are not Canadians." In other words, to be eligible to operate a satellite communications in Canada, a corporation must not be owned more than 20% by foreigners. However, in the case of a holding company foreign ownership could

at www.cab-acr.ca/english/media/news/05/nr_feb1105.pdf (accessed 21 June 2005).

⁴² 1974-75-76, c. 49; R.S. 1985, c. C-22.

⁴³ *Telecommunications Act*, section 16 (1). According to section 1 of the Act, "Canadian carrier" is a telecommunications common carrier that is subject to the legislative authority of Parliament and "telecommunications common carrier" means "a person who owns or operates a transmission facility used by that person or another person to provide telecommunications services to the public for compensation."

be upto 33.3%.⁴⁴ Such foreign ownership restrictions do not apply in respect of the ownership or operation of “earth stations that provide telecommunications services by means of satellites.”⁴⁵ International satellite telecommunications services could be provided only in accordance with an international telecommunications service license to be procured from the CRTC.⁴⁶ The license could be issued for a term not exceeding ten years, but could be renewed on application to that effect.⁴⁷ A license is transferable only with the prior consent of the Commission.⁴⁸ The CRTC may suspend or revoke a license whenever it “believes on reasonable grounds that the licensee has contravened this Act, the regulations or any condition of the license.”⁴⁹

The Canadian *Broadcasting Act* is essentially aimed at protecting and enhancing Canadian culture. Section 3 of the Act, written on three pages, extensively elaborates Canadian Broadcasting Policy. The key elements of this Policy are that:

(a) the Canadian broadcasting system, a public service, (i) is essential to the maintenance and enhancement of national identity and cultural sovereignty, (ii) shall be effectively owned and controlled by Canadians, and (iii) shall serve to safeguard, enrich and strengthen the

cultural, political, social and economic fabric of Canada, and

(b) the programming provided by the Canadian broadcasting system should (i) be varied and comprehensive, providing a balance of information, enlightenment and entertainment for men, women and children of all ages, interests and tastes, and (ii) reflect the linguistic duality and multicultural and multiracial nature of Canadian society and the special place of aboriginal peoples within that society. The implementation of this Policy is entrusted to the CRTC, which has been considerably empowered under the *Broadcasting Act* for the performance of this very difficult and complex responsibility.

The *Broadcasting Act* applies in respect of broadcasting carried on in whole or in part within Canada or with the use of “any spacecraft that is under the direction or control of (i) Her Majesty in right of Canada or a province, (ii) a citizen or resident of Canada, or (iii) a corporation incorporated or resident in Canada.”⁵⁰ To be eligible to carry out broadcasting, a corporation must not be owned more than 20% by foreigners. However, in the case of a holding company foreign ownership could be upto 33.3%. Such restrictions on foreign ownership of Canadian broadcasting entities have generally been supported in Canada; e.g. the House of Commons, Standing Committee on Canadian Heritage, recently carried out a detailed study of broadcasting in Canada

⁴⁴ *Canadian Telecommunications Common Carrier Ownership and Control Regulations*, SOR/94-667, available at <http://laws.justice.gc.ca/en/T-3.4/SOR-94-667/text.html> (accessed 10 June 2005).

⁴⁵ *Telecommunications Act*, section 16 (5)(b).

⁴⁶ *Ibid*, section 16.1(1).

⁴⁷ *Ibid*, section 16.3 (4) and (5).

⁴⁸ *Ibid*, section 16.3(6).

⁴⁹ *Ibid*. section 16.4(1).

⁵⁰ *Broadcasting Act*, section 4 (2). Section 2 of the Act defines “broadcasting” as “transmission of programs, whether or not encrypted, by radio waves or other means of telecommunication for reception by the public by means of broadcasting receiving apparatus, but does not include any such transmission of programs that is made solely for performance or display in a public place.”

and recommended the maintenance of such restriction in order to protect Canadian culture.⁵¹ Before starting a broadcasting service, an appropriate license must be procured from the CRTC.⁵² This license requirement is in addition to the one from the Minister of Industry under the *Radiocommunication Act*. However, no license can be issued to (a) non-Canadians,⁵³ (b) any Canadian province, (c) agents of any Canadian province, and (d) municipal governments.⁵⁴ The CRTC has issued several sets of very complex and detailed regulations under the *Broadcasting Act* for the purpose of promoting Canadian Content on all means of broadcasting.⁵⁵ These regulations impose conditions on the broadcasting licensees with respect to carriage of certain percentage of Canadian programs and not to transmit foreign programs without prior authorization. The CRTC divides the television channels allowed to be distributed by cable companies into two categories; i.e 'basic' and 'discretionary'. Discretionary channels are allowed on the basis of predetermined linkage between

Canadian and foreign satellite television channels in order to protect national broadcasters and program producers. For this purpose, 'Lists of Eligible Satellite Services' are maintained by the CRTC.⁵⁶ Recently, the CRTC refused the carriage of Italian RAI International channel on the ground that this could create undue competition with local programs⁵⁷ but allowed the carriage of Al Jazeera as no local entity was producing and broadcasting programs similar to those of Al Jazeera.⁵⁸ This aroused serious and sensitive debate in the country.

REMOTE SENSING

Canada is a country of vast territory and of extensive coastline in the East, West and North. It is primarily Canada's domestic needs for natural resources exploration, mapping, crop and forest monitoring and management, weather forecasting and environmental monitoring, and disaster response and mitigation, that have led to its decision to use satellite remote sensing technologies and systems.⁵⁹ Today,

⁵¹ House of Commons, Standing Committee on Canadian Heritage, *Our Cultural Sovereignty: The Second Century of Canadian Broadcasting*, [June 2003], available at <http://www.parl.gc.ca/InfoComDoc/37/2/HERI/Studies/Reports/herirp02-e.htm> (accessed 20 September 2005).

⁵² *Broadcasting Act*, section 9 (1).

⁵³ *Direction to the CRTC (ineligibility of non-Canadians)*, available at <http://www.crtc.gc.ca/eng/LEGAL/NONCANAD.HTM> (accessed 10 June 2005).

⁵⁴ *Direction to the CRTC (Ineligibility to Hold Broadcasting Licences)*, [SOR/85-627], available at <http://www.crtc.gc.ca/eng/LEGAL/INELIGIB.HTM> (accessed 20 September 2005).

⁵⁵ Broadcasting Distribution Regulations [SOR/99-423], Pay Television Regulations [SOR/90-105], Radio Regulations [SOR/86-982], Specialty Services Regulations, [SOR/90-106], Television Broadcasting Regulations [SOR/87-49], etc.

⁵⁶ Public Notice CRTC 1998-7, Ottawa, 30 January 1998, available at <http://www.crtc.gc.ca/archive/eng/Notices/1998/PB98-7.htm?Print=True> (accessed 20 September 2005).

⁵⁷ Broadcasting Public Notice CRTC 2004-50 (Requests to add non-Canadian third-language services to the lists of eligible satellite services for distribution on a digital basis), Ottawa, 15 July 2004, available at <http://www.crtc.gc.ca/archive/ENG/Notices/2004/pb2004-50.htm?Print=True> (accessed 20 September 2005).

⁵⁸ Broadcasting Public Notice CRTC 2004-51 (Requests to add Al Jazeera to the lists of eligible satellite services for distribution on a digital basis) Ottawa, 15 July 2004, available at <http://www.crtc.gc.ca/archive/ENG/Notices/2004/pb2004-51.htm?Print=True> (accessed 20 September 2005).

⁵⁹ Government of Canada, Department of Foreign Affairs and International Trade, News Release (No. 134, 9 June 1999), *Canada to Control Imaging Satellites*, Background "Developing a Canadian

Canada is a world leader in the design, development, manufacturing, operation and utilization of remote sensing satellites using Synthetic Aperture Radar (SAR) technology.⁶⁰ Canada's first remote sensing satellite RADARSAT-1 was launched in November 1995 and has since been collecting SAR data that are being distributed by RADARSAT International Inc.⁶¹ The RADARSAT-2 remote sensing satellite system, is a joint venture between the Canadian Space Agency (CSA) contributing \$400 million and MacDonald Dettwiler (MDA) investing \$ 90 million.⁶² The satellite will be launched in 2006 by Boeing Co. of the USA for mission duration of 7 years and will have 3-metre resolution.⁶³

Currently there is no specific Canadian law that fully governs Canadian remote sensing satellites and operations. In addition to the *Radiocommunication Act*⁶⁴ under which a

Access Control Policy For Commercial Remote Sensing Satellites," available at http://webapps.dfait-aei.gc.ca/minpub/Publication.asp?publication_id=375907&Language=E (accessed 20 September 2004).

⁶⁰ Ibid.

⁶¹ <http://www.rsi.ca/products/sensor/radarsat/radarsat1.asp> (accessed 15 August 2005); *Radarsat-1 Celebrating Eight Productive Years in Space* (Saint-Hubert - Nov 05, 2003), available at <http://www.spacedaily.com/news/eo-03zzzp.html> (accessed 5 May 04).

⁶² Canadian Space Agency, *RADARSAT-2 Team*, available at <http://www.space.gc.ca/asc/eng/satellites/radarsat2/teams.asp> (accessed 15 August 2005).

⁶³ *More About RADARSAT-2 Satellite*, available at http://www.radarsat2.info/rs2_satellite/overview.asp (accessed 02 June 2005); Canadian Space Agency, *RADARSAT-2 Team*, available at <http://www.space.gc.ca/asc/eng/satellites/radarsat2/teams.asp> (accessed 15 August 2005).

⁶⁴ Section 4, *Radiocommunication Act*, R.S., 1985, c. R-2, s. 1; 1989, c. 17, s. 2.

license is required for the use of radio frequencies, the Government of Canada has issued a set of policy directives that regulate the collection and distribution of remote sensing data and products produced by Canadian satellites and entities.⁶⁵ These policies have been developed after thorough internal discussions and reaching a bilateral agreement with the Government of the US.⁶⁶ Such policies prescribe the following principles that guide the concerned governmental officials: the approval of launch and operation of all commercial remote sensing satellite systems owned, operated or registered in Canada, are considered to be in Canada's interest. However, such approvals are subject to limits deemed necessary and sufficient to protect Canada's national security and foreign affairs interests. The owner, operator or registered entity, as appropriate, is required to (a) register with an appropriate Government of Canada department for approval of the system, (b) not change the operational characteristics of the system from that registered without formal notification and approval of the appropriate minister(s), (c) not transfer ownership, operation or registration to any company, whether foreign or domestic, without the explicit permission of the

⁶⁵ Government of Canada, Department of Foreign Affairs and International Trade, News Release (No. 134, 9 June 1999), *Canada to Control Imaging Satellites*, available at http://webapps.dfait-aei.gc.ca/minpub/Publication.asp?publication_id=375907&Language=E (accessed 20 September 2004).

⁶⁶ Government of Canada, Department of Foreign Affairs and International Trade, *CANADA AND UNITED STATES SIGN AGREEMENT CONCERNING OPERATION OF COMMERCIAL REMOTE SENSING SATELLITE SYSTEMS*, News Release (No. 153, 16 June 2000), available at http://w01.international.gc.ca/minpub/Publication.asp?publication_id=377855&Language=E (accessed 15 August 2005).

appropriate minister(s), (d) maintain positive control of the satellite at all times, execute such control solely from the jurisdiction of the Government of Canada, (e) notify the Department of Foreign Affairs and International Trade (DFAIT) of its intent to enter into significant or substantial agreements with foreign customers, and (f) make available to the government of any country, including Canada, data acquired by its system concerning the territory under the jurisdiction of such a government (i.e. sensed state) in accordance with the 1986 United Nations Resolution no. A/RES/41/65 entitled "Principles Relating to Remote Sensing of the Earth from Space." However, such data shall not be provided to the sensed state if it is determined to be detrimental to Canada's national security and foreign affairs interests.⁶⁷

Under the Canada-US bilateral agreement concerning the operation of commercial remote sensing satellites (specifically RADARSAT-2), the Government of Canada undertook to develop "a regulatory environment for these systems that balances the broad promotion of the private use of high-performance imaging satellites with the need to protect national security and foreign policy interests."⁶⁸

⁶⁷ Government of Canada, Department of Foreign Affairs and International Trade, News Release (No. 134, 9 June 1999), *Canada to Control Imaging Satellites*, available at http://webapps.dfait-aei.gc.ca/minpub/Publication.asp?publication_id=375907&Language=E (accessed 20 September 2004).

⁶⁸ Government of Canada, Department of Foreign Affairs and International Trade, *CANADA AND UNITED STATES SIGN AGREEMENT CONCERNING OPERATION OF COMMERCIAL REMOTE SENSING SATELLITE SYSTEMS*, News Release (No. 153, 16 June 2000), available at <http://w01.international.gc.ca/minpub/Publication.a>

Pursuant to this undertaking, the Government of Canada tabled in November 2004 a draft legislation (Bill C-25, *An Act Governing the Operation of Remote Sensing Space Systems*)⁶⁹ in the House of Commons – the Lower House of the Canadian Parliament. The Bill is essentially based on the remote sensing policies mentioned above. The House of Commons' Standing Committee on Foreign Affairs and International Trade has conducted hearings on the Bill and has reported its recommendations to the House of Commons in April 2005.⁷⁰ The Bill was passed by the House of Commons on 5th October 2005.⁷¹ The Bill designates the Minister of Foreign Affairs as responsible for the implementation of its provisions. Once passed by the Senate – the Upper House of Canadian Parliament, and proclaimed as an Act, it will have the effect of transforming the above-

[sp?publication_id=377855&Language=E](http://www.international.gc.ca/minpub/Publication.asp?publication_id=377855&Language=E) (accessed 15 August 2005).

⁶⁹ Available at http://www.parl.gc.ca/common/Bills_House_Government.asp?Language=E&Parl=38&Ses=1 (accessed 20 July 2005). (hereinafter referred to as Remote Sensing Space Systems Act.) See also, Government of Canada, Department of Foreign Affairs and International Trade, *CANADA TABLES LEGISLATION REGULATING REMOTE SENSING SPACE SYSTEMS*, News Release (No. 136, 23 November 2004) available at http://w01.international.gc.ca/minpub/Publication.asp?Language=E&publication_id=381804 (accessed 20 July 2005). For legislative history of the Act, see http://www.parl.gc.ca/common/Bills_ls.asp?lang=E&Parl=38&Ses=1&ls=C25&source=Bills_House_Government (accessed 10 October 2005).

⁷⁰ House of Commons, Standing Committee on Foreign Affairs and International Trade, 38th Parliament 1st Session (5 April 2005), available at <http://www.parl.gc.ca/committee/CommitteePublication.aspx?SourceId=107797> (accessed 20 July 2005).

⁷¹ http://www.parl.gc.ca/38/1/parlbus/chambus/house/bills/government/C-25/C-25_3/C-25_cover-E.html (accessed 10 October 2005).

mentioned policy directives into legal rules and procedures. According to section 5 of the Bill, “No person shall operate a remote sensing space system in any manner, directly or indirectly, except under the authority of a license” from the Minister of Foreign Affairs. After considering national security, the defense of Canada, the safety of Canadian Forces, Canada’s conduct of international relations, and Canada’s international obligations, the Minister may issue a license, renew or amend a license, or issue a provisional license, subject to the conditions that the Minister considers appropriate.⁷² Some of these conditions, as specified in the Act, include:⁷³

(a) that the licensee keep control of the licensed system;

(b) that the licensee not permit any other person to carry on a controlled activity in the operation of the system except in accordance with the license;

(c) that raw data and remote sensing products from the system about the territory of any country — but not including data or products that have been enhanced or to which some value has been added — be made available to the government of that country within a reasonable time, on reasonable terms and for so long as the data or products have not been disposed of, but subject to any license conditions that the Minister considers appropriate; and

(d) that the licensee keep control of raw data and remote sensing products from the system.

HUMAN SPACE ACTIVITIES

⁷² Remote Sensing Space Systems Act, subsection 8(1).

⁷³ Ibid, subsection 8(4).

Canada’s single largest space program relates to human space activities, primarily through CSA’s participation in the International Space Station (ISS). The Canadian Space Agency, through its Space Mission Operations Programs (Space Science and Exploration), takes part in the ISS, which is believed to provide “an opportunity for Canadians to participate in research that simply cannot be completed here on Earth. As a stable space laboratory the ISS provides access for longer-term experiments, not possible on space shuttles or other ground-based microgravity platforms.”⁷⁴ On 29th January 1998, Canada signed the revised Inter-Governmental Agreement (IGA) on International Space Station.⁷⁵ Pursuant to its obligations under the IGA and the Memorandum of Understanding with NASA,⁷⁶ Canada’s main contribution to the ISS is the Mobile Servicing System (MSS or Canadaarm2) and the Special Purpose Dexterous Manipulator). In return for this contribution, Canada is entitled to access rights up to 2.3% of the non-Russian ISS utilization. The MSS’s

⁷⁴ CSA, *Benefits of Scientific Research on the ISS*, available at <http://www.space.gc.ca/asc/eng/iss/science.asp> (accessed 13 September 2005).

⁷⁵ Agreement among the Government of Canada, Governments of member States of the European Space Agency, the Government of Japan, the Government of the Russian Federation, and the Government of the United States of America concerning cooperation on the civil International Space Station, signed at Washington, DC, on 29th January 1998. (hereinafter referred to as the 1998 IGA).

⁷⁶ Memorandum of Understanding between the National Aeronautics and Space Administration of the United States of America and the Canadian Space Agency concerning cooperation on the civil International Space Station, signed at Washington, DC, on 29th January 1998, available at ftp://ftp.hq.nasa.gov/pub/pao/reports/1998/nasa_csa.html (accessed 8 March 2004).

design, development, and installation on the ISS, will cost about \$1.4 billion over 20 years and this investment is estimated to bring in economic benefits to Canada worth about \$6 billion with 70,000 person-years of employment.⁷⁷

International Space Station and Canadian Domestic Law

The IGA is, in a number of ways, tied to national laws of the Partner States. The following is just a small list of issues; e.g. (a) financial obligations of each Partner to the Agreement are subject to its national funding procedures and the availability of appropriated funds;⁷⁸ (b) subject to its national laws and regulations, each Partner is obliged to facilitate the movement of persons and goods necessary to implement this Agreement into or out of its territory;⁷⁹ (c) no Partner State is required to exchange technical data and goods in contravention to its national laws;⁸⁰ and (d) the granting of intellectual property rights is to be processed essentially according to the national laws of the Partners States;⁸¹ exercise of national criminal jurisdiction over personnel in or on any flight element;⁸² etc. Canada does not seem to have made any specific changes in its laws respecting these matters, except in the case of exercise of its criminal jurisdiction.

Under Article 22.1 of the IGA, Canada is entitled to “exercise criminal jurisdiction

over personnel in or on any flight element who are” Canadian nationals. In order to provide domestic legal basis for the exercise of such jurisdiction, Canada passed a legislation under which it slightly amended the applicable provisions of its *Criminal Code*.⁸³ Section 7 of the *Criminal Code* has been amended by adding the following:

“Space Station - Canadian crew members

(2.3) Despite anything in this Act or any other Act, a Canadian crew member who, during a space flight, commits an act or omission outside Canada that if committed in Canada would constitute an indictable offence is deemed to have committed that act or omission in Canada, if that act or omission is committed (a) on, or in relation to, a flight element of the Space Station; or (b) on any means of transportation to or from the Space Station.

Space Station - crew members of Partner States

(2.3.1) Despite anything in this Act or any other Act, a crew member of a Partner State who commits an act or omission outside Canada during a space flight on, or in relation to, a flight element of the Space Station or on any means of transportation to and from the Space Station that if committed in Canada would constitute an indictable offence is deemed to have committed that act or omission in Canada, if that act or omission (a) threatens the life or security of a Canadian crew member; or (b) is committed on, or in relation to, a flight element provided by Canada or damages a Canadian flight element.”

⁷⁷ CSA, *International Space Station facts and figures*, available at <http://www.space.gc.ca/asc/eng/iss/facts.asp> (accessed 20 September 2005).

⁷⁸ 1998 IGA, Art.15.

⁷⁹ Ibid, Art. 18.

⁸⁰ Ibid, Art. 19.

⁸¹ Ibid, Art.21.

⁸² Ibid, Art. 22.

⁸³ Civil International Space Station Agreement Implementation Act, assented to 16th December 1999, Statutes of Canada 1999, Chapter 35.

MILITARY USES OF OUTER SPACE

Canada's space activities are expressly for peaceful purposes and the country does not operate any satellite system on its own for military purposes. However, the Department of National Defense "conducts research and development in space surveillance and communications systems..... [and] plans greater use of space for surveillance and communications."⁸⁴ Canada is a member of NATO and NORAD alliances which extensively use space assets for military purposes in general and during actual war operations. Canada's declared policy has consistently been against, not the militarization but, the weaponization of outer space.⁸⁵ The rationale for such policy, as stated by the Department of Foreign Affairs and International Affairs is that:

"The development, testing and deployment of space-based anti-satellite and ballistic missile defense systems, in addition to threatening the current peaceful uses of outer space, could also extinguish the explicit right of use of outer space of any nation in favor of implicit permission for its use by the first nation to successfully deploy such weapons in outer space. Access to outer space via space launch vehicles might then need to run a

⁸⁴ "Spaceports Around the World: Canada's Churchill Spaceport," available at <http://www.spacetoday.org/Rockets/Spaceports/Canada.html> (accessed 02 September 2005).

⁸⁵ Canada's former Foreign Affairs Minister John Manley said that Canada was "unalterably opposed" to the American BMD, which "would be very destabilizing because it could provoke unpredictable responses": J. Sallot, "U.S. space arms plan draws ire of Canada," *The Globe and Mail*, Toronto, July 26, 2001, p. A 9.

gauntlet of orbiting space-based weapons."⁸⁶

Therefore, Canada recently decided not to join the American Ballistic Missile Defense (BMD) system, though would continue participating in the NORAD operations with the US.⁸⁷

CANADA'S INTERNATIONAL RESPONSIBILITY

The Government of Canada bears international responsibility for national space activities whether carried out by Canadian governmental agencies or by non-governmental entities.⁸⁸ Where such space activities are carried out by non-governmental agencies, the Government of Canada is required to authorize and continually supervise those activities.⁸⁹ The Government of Canada could also be internationally liable to pay compensation for any damage that may occur to foreign countries or entities as a result of the launching or procurement of the launching of a space object by a Canadian space-faring entity from any place, and also for damage which occurs to foreign entities as a result of space activities carried out from

⁸⁶ *The Non-weaponization of Outer Space*, available at <http://www.dfait-maeci.gc.ca/arms/outer3-en.asp> (accessed 23 January 2003).

⁸⁷ "Canada Will Not Participate In US Missile Defense Program" Montreal (AFP) Feb 24, 2005; available at <http://www.spacewar.com/news/bmdo-05i.html> (accessed 25 February 2005); *CBC News*, "Canada won't join missile defense plan" Last Updated Thu, 24 Feb 2005, available at <http://www.cbc.ca/story/canada/national/2005/02/24/missile-canada050224.html> (accessed 24 February 2005).

⁸⁸ Outer Space Treaty, Art. VI.

⁸⁹ *Ibid.*

within Canadian territory or from a Canadian facility.⁹⁰

Although the Government of Canada is primarily internationally liable for the payment of compensation to foreign countries or entities which suffer damage as a result of the above mentioned space activities, there are no statutory provisions under Canadian national law regarding the recovery of the amounts payable as compensation by the Government from the space-faring entities whose space activities are the direct cause of the damage in question. In the absence of statutory provisions on the subject, any claim by the Government for recovery of compensation particularly from non-governmental space-faring entities must be founded on common law principles.

In most cases, it is likely that the Government, in authorizing the space activity concerned, would enter into a contract of indemnification with the space-faring entity. In such cases, the basis of the claim for recovery by the Government would be contractual and less likely to create any prolonged litigation. Under the rules of contract law the recovery would only be successful if the contract of indemnification is enforceable at law. Where, however, the Government has no contract of indemnification with the space-faring entity, the cause of action for recovery most likely would be founded on the common law tort of negligence, unless the damage occurred as a result of an intentional or criminal act or omission on the part of the space-faring entity, in which case criminal proceedings would be most appropriate.

⁹⁰ *Ibid.* Art. VII; See also *Convention on the International Liability for damage caused by Space Objects*, 29th March 1972, 961 UNTS 187, Arts. I-IV.

For the Government to successfully recover on a claim based on negligence under common law, the following traditional elements must be established: (a) the existence of a duty of care on the part of the space-faring entity; (b) breach of the duty of care; and (c) damage resulting from the breach.⁹¹

CONCLUSION

This short paper provides an overview of the space regulatory framework in Canada with a view to introducing the reader to the complex legal and regulatory regime that Canada has developed progressively over a period of four decades. The paper shows how Canada as a medium space power has managed to make a significant progress in space activities while adopting a very practical, coherent and systematic approach to space regulation. There certainly are areas in which laws need to be updated, e.g. protection of intellectual property in remote sending data and research carried out by the Canadians on board the ISS. It is hoped that the Canadian space regulatory framework could serve as a model for other States, particularly those that have limited space activities.

⁹¹ Linden, Allen M. Lewis N. Klar & Bruce Feldthusen, *Canadian Tort Law, Cases, Notes and Materials*, 12th ed. (Markham: Lexis Nexis Butterworths, 2004) at 155.