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Canada's Space Policy and its Future with NORAD

by Andrew B. Godefroy
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Canada became the world's third spacefaring state when it sent its own *Alouette-1* experimental satellite into orbit in September 1962. This event was also remarkable in that it came to symbolize the by then routine bilateral cooperation that existed between Canada and the United States in the realm of aerospace technology, security and defence. Deployed just four years following the creation of the North American Air (later Aerospace) Defense Command (NORAD) agreement, *Alouette-1* travelled into outer space safely atop a US Air Force (USAF) Thor Agena-B rocket launched from Vandenberg Air Force Base (AFB), California. It would be the first of many Canadian satellites to be launched by Canada's American partners, made possible in part as a result of the two countries' shared interests in bilateral cooperation through the discovery, defence and security of outer space.

Since the dawn of the space age, unrestricted access to and freedom of manoeuvre within outer space has remained a vital Canadian national interest. As the second largest country on the globe in terms of geography, Canada's relatively sparse and widely dispersed population today depends entirely on national dual-use space systems for everything from security and defence to situational awareness, weather, communications, navigation and even day-to-day finance. Space systems, once ancillary to daily life and security and an attractive yet expensive enabler for governments, have over the course of the last 60 years become an integral part of all Canadian sovereignty and prosperity. Space systems are no longer just a warm coat; today they form society's nervous system – one that the modern body could not likely continue without.

From a defence and security perspective specifically, Canadians continue to find themselves in a unique geostrategic situation between two larger influential superpowers – the United States and Russia. As a close defence ally and economic partner of the former, Canada has especially since the end of the Second World War worked very closely with the United States on every level to secure the air, sea and land approaches to North America and to keep their populations safe mainly from the threats and exploitations of the latter. A 'temporary' arrangement originally made in 1957-58 to defend North America against a surprise Soviet air attack, NORAD has since become a timeless organ of Western collective security and today continues its role as the main embodiment of Canadian-American aerospace defence cooperation.

Though relationships with former adversaries have changed greatly over the years since the end of the Cold War era, there remains much competition among state actors for real estate, resources and relative safety, especially in northern regions as the Arctic becomes an area of great focus and interest for an increasing number of states. There is also the growing concern amongst Canada's allies about adversarial states employing ballistic missile technologies to threaten North America directly. Similarly, we are living in an era of resurgent terrorism and international instability that has included the use of aircraft as a weapon. All of these threats to North American security demand a vigilant response from Canada and the United States, as the shared border ensures that both countries also share to a large extent the same risks.

As the modern name of NORAD itself clearly suggests, for many decades now it has not just been the airspace, but rather both air and outer space that must be addressed in terms of security and defence. As such, the current existence of NORAD and Canada's future within it must continue to be in alignment with Canada's own national space strategy and agenda, as well as the defence and security space policies that provide guidance to the government departments that must execute that policy and programming. At the same time, whatever role Canada chooses to pursue within NORAD going forward, it must be a relevant one that illustrates true



defence *partnership*, not just *contributor*, if the collaborative agreement is to survive and benefit Canadian security over the long term.

With an impending review of Canada's defence policy, a great opportunity exists to modernize what has become an aged and at times outdated national space strategy and defence space strategy and policy for Canada. While Canada's civilian space policy has advanced through a series of frequent reviews and longer-term planning, defence space strategy has not evolved so easily alongside it, nor has defence space policy kept pace with it. Canada has not publicly released a comprehensive defence space strategy since the late 1960s, and the defence space policy still in use was last updated in 1998. As a result, current defence space planning and operations must attempt to advance, with some irony perhaps, in a vacuum. It is a situation that could be rather easily rectified while at the same time opening up new opportunities for the evolution of a new national space agenda that would support both Canada's civilian and defence requirements.



General Dynamics Canada

WHAT DOES CANADA DO?

Critical to future Canadian sovereignty, security and prosperity is its continued assured access to, and use of, outer space. Therefore, Canada simply cannot afford to make outer space any less of a priority than it already is, as it is intimately tied to those other policies that ensure the security and safety of all Canadian citizens every day. Similarly, organizations such as NORAD must continue to be supported in every possible way. While there might be policy alternatives to the current NORAD agreement, none of them would be less costly than the current effort, nor would they present any greater efficiency in terms of delivering the same effects to North



American security that NORAD does. Quite the opposite, any diminishment of Canada's role in NORAD will result in lost opportunities, a loss of international influence, a reduction in situational awareness to defence-sharing arrangements, and the degradation of high-technology personnel skills within certain elements of the Department of National Defence (DND) and the Canadian Armed Forces (CAF).

Assuming that Canada remains a partner in North American defence through organizations such as NORAD, there will need to be a serious consideration and informed debate regarding the country's potential future role in ballistic missile defence. The contemporary security environment has evolved considerably, and new missile threats have presented themselves since the last decision in 2005 to refuse participation. At the very least this position will have to be reviewed and reassessed in light of the current situation.

Evolving NORAD at a minimum cost in defence dollars, however, will require Canada to leverage a range of space sector opportunities. For example, Canada should continue to support efforts through the United Nations and other international organizations to create effective frameworks for the peaceful use of outer space. Additionally, creating and sustaining international frameworks will require Canada to work closely with its main partners and allies, especially the United States and the European space community, to meet the challenges and opportunities presented by other state and non-state actors.

For NORAD to continue as a critical enabler in Canadian sovereignty, defence and security, Canada must have a long-term national strategy for space and functional and responsive policy for defence space programs. This does not have to be as complicated as it sounds. Canada can and should build on its solid space strategy legacy, founded in both science and technology (S&T) research and application, as well as communications, robotics and data exploitation. Most important, perhaps, previous strategies have maximized their dual-use ways and means – meaning that a satellite or other space asset can have both civilian and military application – to achieve a broad range of goals or ends. A renewed national space strategy should reflect these traditional strengths, of course, while at the same time explaining how it will leverage its existing expertise, current partnerships and national industry to achieve new ends for the country. Similarly, a responsive policy for defence space programs should reflect and build upon national strategic objectives.

This defence strategy and policy should be led by the Royal Canadian Air Force (RCAF) as this armed service has traditionally held responsibility for Canada's ballistic missile, early warning, rocketry and defence space programs. Enabled by strategy and policy, the RCAF must also be a leader in space-related defence research and development as well as the application of defence space capabilities. Finally, it must foster a culture of defence space expertise, one that may be easily leveraged to meet future NORAD, as well as other space operations, support personnel requirements.

HOW DOES CANADA DO IT?

The future of Canada's partnership in NORAD ultimately depends on its perceived relevance and value added by its larger and more influential American ally. A first step towards relevance would be the renewal of defence space strategy and policy. Once enabled, DND should seek to employ Canada's space capabilities to their fullest in support of coalition operations and missions. This means adopting a comprehensive approach to space operations support and



leveraging whole-of-government support in the pursuit of national defence space capabilities as well as extending those capabilities to its main partner as required.

The defence space agenda should continue to invest in a wide range of capabilities that will enhance CAF operations writ large. These would include, but not be limited to, intelligence, surveillance and reconnaissance, space situational awareness, search and rescue, satellite communications, position, navigation and timing, command and control, and space-derived data management and sharing.

Finally, to do so, DND/CAF will require a new generation of personnel who are educated and trained in all aspects of space technologies, capabilities, applications and support. The pursuit of such knowledge and training not only directly enhances DND/CAF capabilities, it also fosters a broader cadre of Canadians to embrace the critical science, technology, engineering and mathematics skill fields necessary for Canada's future development.

HOW MUCH WILL IT COST?

Space has always been, and is likely to remain for quite some time to come, a terribly expensive endeavour. But economic insecurity and leaving Canada exposed to constant threats from belligerent states and international terrorism will always cost Canada much more. Assuming that there will be no dramatic increase in current defence spending levels for the foreseeable future, Canada's continued investment in space and its main aerospace defence organizations must decide – given the current threats – how much risk the government is willing to accept. Canada's current budget for space activities is approximately \$400m annually, while defence spending on NORAD is approximately \$83.5m per year according to recent [defence estimates](#). Additionally, a portion of the DND budget is attributed directly to aerospace sustainment, defence space programs and related projects. For the time being, these allocations should remain constant, with a view to finding opportunities for efficiencies through increased dual-use capability development and sharing arrangements going forward.

► **About the Author**

Andrew Godefroy is a former defence space policy analyst, an Adjunct Professor at the Canadian Defence Academy, and the author of 'Canada's Space Program: From Black Brant to the International Space Station' (Springer Books, 2016).



► **Canadian Global Affairs Institute**

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The Institute was created to bridge the gap between what Canadians need to know about Canadian international activities and what they do know. Historically Canadians have tended to look abroad out of a search for markets because Canada depends heavily on foreign trade. In the modern post-Cold War world, however, global security and stability have become the bedrocks of global commerce and the free movement of people, goods and ideas across international boundaries. Canada has striven to open the world since the 1930s and was a driving factor behind the adoption of the main structures which underpin globalization such as the International Monetary Fund, the World Bank, the International Trade Organization and emerging free trade networks connecting dozens of international economies. The Canadian Global Affairs Institute recognizes Canada's contribution to a globalized world and aims to inform Canadians about Canada's role in that process and the connection between globalization and security.

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