IMPROVING THE ACQUISITION PROCESS IN CANADA

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SUMMARY
Flaws in Canada’s military procurement processes are a perennial burden on both government and industry. The release of the Defence Procurement Strategy this year signified Ottawa’s inclination toward change. Among other things, the DPS promises to consult industry and outside experts earlier, create a specialist acquisition branch within Public Works & Government Services Canada and use military equipment projects to generate domestic jobs and growth. The DPS is a good start, but more focused solutions are required. The defence market has too few buyers and sellers to be truly competitive — especially in Canada. Government must share information with industry at every step, clearly and comprehensively, if Canadian firms are to win contracts fairly, keeping the economic benefits at home. A sweeping, end-to-end review of procurement is also required to identify current practices that work and others in need of improvement. Preliminary cost estimates can’t be too firm because prices shift as projects develop, and all too often, capabilities are downgraded in response. Government has to be transparent about how far into the future lifecycle costs run, or stop trying to establish them altogether, so as to avoid the consequences of embarrassingly unrealistic assessments. A separate procurement organization should also be established outside of the DND and PWGSC to make better use of the people with the skills to run complex military procurement projects. Canada’s military procurement system is not as broken as its most strident critics allege, but it is coming under increasing fiscal and policy pressures. This brief fleshes out the issues that would-be reformers should take into account and surveys procedures among allied nations to offer a roadmap for change.
As Canada’s House of Commons resumed its work in October 2013, and the Office of the Auditor General released its Fall 2013 report, attention once again turned to the issue of military procurement and the government’s inability to make progress on the major investments announced in the 2008 Canada First Defence Strategy (CFDS). A recent October 9, 2013 Toronto Star opinion piece by Michael Byers was headlined “Canada’s military procurement is like a Monty Python Movie,” and remarked that, “Indeed, when it comes to defence procurement, Harper is straight out of Monty Python — about as effective as a knight riding a make-believe horse while knocking two coconuts together to simulate the beating of hooves.” Byers, who has been quite vocal in his opposition to a number of the current government’s activities may be exaggerating for effect, but nevertheless identifies the military procurement challenge for government. Despite significant investments in the Canadian Forces during its combat mission in Afghanistan, and a willingness to invest in new capabilities, the Department of National Defence (DND), Public Works and Government Services Canada (PWGSC) and Industry Canada—the three main departments involved in military procurement—have been unable to bring a number of major projects to fruition.

Reforming the process is a frequent request on the part of industry and some of their partners in government. How to reform the process remains a significant and unresolved challenge, although the recent release of a Defence Procurement Strategy (DPS) indicates an effort is underway. This policy paper will discuss the procurement challenges facing Canada and address what the challenges and solutions might be, given the recent February 2014 announcement of the DPS.

This paper is part of a larger project examining how leveraging military procurement through key industrial capabilities can improve or impede costs, benefits and risks. The paper will look at the policy aspects of military procurement and discuss whether or not anything can be done to overcome the political constraints that impede faster and more efficient procurement. It will begin with some brief comments on the defence procurement market and why that matters in a nation like Canada. Next, this paper will look at the policy gaps that exist for military procurement in Canada and finally, articulate what might be done to improve the process.

THE PROCUREMENT CONTEXT

Defence procurement reforms across Western nations have been the subject of reports and studies for decades. The problem of acquisition reform, according to Bernard Gray in his October 2009 review for the United Kingdom’s Secretary of State for Defence, is that, “Acquisition Reform, as it is generally known, is a subject only about five minutes younger than the acquisition of military equipment itself.” Ross Fetterly’s study of defence procurement reforms in other nations begins with a quote from Steven Reeves that captures the essence of this issue: “During the past 50 years, defense acquisition reform panels, studies, reviews, and commissions occurred with such frequency that they could virtually provide lifetime employment.”

Nevertheless, despite this apparent plethora of studies by others, the Canadian government has not been a participant. No significant government-sponsored end-to-end review of Canada’s procurement process has been conducted in decades. There have been some limited and context-specific studies, such as the

1 Byers, Michael. “Canada’s military procurement like a Monty Python movie,” Toronto Star opinion piece (9 October 2013). Available at http://www.thestar.com/opinion/commentary/2013/10/09/canadas_militaryProcurement_like_a_monty_python_movie.html#.
Canadian Association of Defence and Security Industry’s 2009 report and the 2012 Jenkins panel report on leveraging defence procurement to promote key industrial capabilities, but these aren’t the same thing as an end-to-end review of procurement. In contrast, both the UK and Australia have conducted major procurement reviews. In the UK there was a Defence Acquisition Policy Paper issued in 2001 as part of the Strategic Defence Review Process, as well as Bernard Gray’s 2009 independent review of acquisition referred to earlier. In conjunction with these acquisition papers, there have been similar policy papers and reports completed that deal with defence industry strategy. Similar policies and reviews have been completed in Australia as well as in some of Canada’s other NATO allies. This is not say that procurement problems no longer exist in these nations, but rather to make the point that there exists a better understanding across government and industry about what the perceived problems are and what the possible solutions might be.

It would be wrong to imply that nothing had been done in Canada. As identified above, the three key Ministers involved in the procurement process in Canada requested advice from Canada’s defence industry. The report by the Canadian Association of Defence and Security Industries (CADSI) in the fall of 2009 notes that they “undertook a 13-week consultation with Canada’s defence industrial base to determine how the government could obtain the equipment needed by the Canadian Forces and achieve an optimal economic return on investment.” Although not a formal review examining the entire procurement process, the CADSI review did provide an industry assessment of the problems with procurement and articulated recommendations. Not much has been done with the CADSI recommendations, but the Minister of Public Works and Government Services Canada has had additional studies completed on defence and industry issues. For example, David Emerson, a former cabinet minister, completed a study on the Aerospace Industry entitled Beyond the Horizon: Canada’s Interests and Future in Aerospace Volume I, while Tom Jenkins, Chairman of the Board for Opentext, completed a study on leveraging defence procurement to promote Canadian industry entitled Canada First: Leveraging Defence Procurement Through Key Industrial Capabilities.

As articulated above, since the release of the CFDS a number of the military procurement projects identified in the strategy have not proceeded as planned, and could be considered political liabilities for the government. They are problematic in terms of industry’s ability to meet the requirements based on the funding available and/or problematic in terms of industry’s concern about the process being unfair and biased towards one solution. For example, a 2011 Chief of Review Services audit of the Joint Support Ship noted that:

“the definition phase of the JSS project was originally approved in November 2004 with a total project indicative cost of $1.99 billion for the purchase of three JSS... The vendors proposals received in March 2008 were found to be non-compliant... neither proposal could deliver the required capability within the allotted project budget.”

In addition to this desire to invest in new military capabilities, there is also a desire to ensure that the money being invested is providing benefits to Canadian industry and Canadians in general. In this context, a number of recent studies have been completed at the request of government and provide recommendations for how the government can improve procurement, create better jobs for Canadians and leverage the spending that is yet to occur as part of the CFDS.

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The study conducted by CADSI for Ministers in the fall of 2009 contained a number of recommendations for improving procurement, while the 2012 Emerson aerospace report and the 2013 Jenkins report on key industrial capabilities provide guidance on what industrial sectors should be promoted through federal government procurement. For example, recommendation 2 of the Emerson report on the aerospace sector dealt with developing a list of aerospace technology priorities, while recommendations 13 and 14 dealt with establishing “earlier, clearer, firmer commitments on industrial and technological benefits” and developing “a partnership approach to in-service support.” The Jenkins report identified six key industrial capability clusters that could be used to inform pending decisions and identified a need for these initial six to be followed by “a regular and more robust review, initially within the next four years, to validate or amend the initial selection based on experience and better data and analysis.” More importantly for this paper is that the longer term intention, if the government proceeds with implementing the recommendations in the CADSI, Jenkins and Emerson reports, would be to provide additional fidelity to the industry clusters and to involve industry much earlier in the procurement process. At the moment there is a lack of adequate evidence-based information to support selecting one option over another. Although the National Shipbuilding Procurement Strategy process has received positive feedback, it is too early to confirm that this will achieve the improvements desired.

In February 2014 the government announced a new Defence Procurement Strategy with three objectives: “Deliver the right equipment to the Canadian Armed Forces (CAF) and the Canadian Coast Guard in a timely manner; leverage our purchases of defence equipment to create jobs and economic growth in Canada; and streamline defence procurement processes.” Although the press release indicates a number of things will be done as part of the Defence Procurement Strategy, the significant components include:

a. Early industry engagement;

b. Publishing an annual Defence Acquisition Guide;

c. Establishing an independent third-party challenge function inside the DND;

d. Identifying key industrial capabilities that will be rated as a value proposition for creating jobs and economic benefits in Canada for any procurement over $100 million;

e. Establishing an independent third-party defence analytics institute to provide expert analysis; and

f. Establishing a defence procurement secretariat within Public Works and Government Services Canada.10

**DEFENCE PROCUREMENT**

Defence procurement is conducted in a unique environment with some very distinguishing features. Seminal works from the 1960s by Peck and Scherer indicate that there are four key features of the procurement process.11 First, the development work for weapons is characterized by uncertainty and risk.

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7 Emerson, 32-33 and 51-53.
8 Jenkins, xiv.
Often, the cost of this risk is shifted from the contractor to the government through cost reimbursement contracts. A second feature is that when a project starts the contractor acquires specialized knowledge, information and assets unique to the weapons system, which subsequently restricts the government’s ability to shop around for other contractors. Thirdly, the features of the weapons acquisition process lead to a non-conventional market system. It is a quasi-administrative buyer-seller relationship. Finally, in the absence of market forces, successful weapons systems acquisition requires government intervention through controls on contractors or through incentives to reward good performance and penalize poor performance.

In the Canadian context, the issue of the absence of market forces is perhaps most important because of the requirement to open government procurement projects to competition, even when that is at odds with promoting Canadian industry. Jacques Gansler’s *The Defense Industry* provides an excellent list of the differences between free market theory and the defence market.12 The critical issue is that the defence market is a market with one buyer and very few, and often very large suppliers, as opposed to the free market structure of many buyers and many sellers. Also, despite the similarity to oligopoly and monopoly market structures, the defence market is one where the buyer and seller (defence firm and government) have a mutual interest in the weapon system. Any examination of the procurement process needs to set aside any belief that defence procurement can be achieved in a competitive market environment. This is just not the case.

Governments are central to understanding defence equipment markets. The government determines technical progress, whether to import equipment or purchase it domestically, the shape of industrial policy through its defence purchases and the size of the defence industry by establishing entry and exit barriers. Furthermore, the trend is that new high-technology defence equipment is costly and is rising in real terms.13 In his 2004 work, Kirkpatrick observed that the two main trends in weapon system costs were the increasing unit cost of weapon systems and the increasing dominance of the fixed costs associated with those weapon systems.14 Later in the same article he states that the “Analysis of cost trends in recent decades has shown that, within each class of weapon system, successive designs have progressively higher unit costs associated with improvements in their performance.”15

Defence procurement is the demand side of the defence equipment market and requires militaries and governments to make choices between defence contractors and also between services. Although national security requirements should be the ultimate driver of what is purchased, the selection of the actual defence contractor is a complicated and lengthy process. Decisions are required on whether or not to source the equipment from a domestic supplier or a foreign supplier and any decision to open the contract to foreign suppliers will likely be opposed by domestic suppliers. Many others will advocate for the use of defence purchases for other economic and political goals. This is particularly true for Canada, because the defence industrial base is generally composed of small and medium-sized enterprises with parent companies in the United States. Canadian defence industries, for the most part, are part of a larger North American defence industrial base and do not have the capacity to build complete complex weapon systems. Canada has historically used offsets and industrial and regional benefits policies as part of its procurement contract award process, in order to ensure economic benefits accrue to Canadian firms and the Canadian economy.

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15 Ibid., 261.
This is not to say that Canadian firms are not capable of building complex weapons systems, but rather it’s an acknowledgement that the domestic demand for the Canadian military is too small to achieve the economies of scale necessary to be competitive in a global marketplace. In this context, the 2009 CADSI report noted that, “Small defence markets, like Canada’s, require proactive defence procurement strategies to enable domestic participation.” In essence, CADSI argued that the government needed to shift the default decision-making to encourage procurement from qualified Canadian sources by:

- Articulating domestic industrial objectives during the requirements definition stage;

- Shifting to rated requirements from mandatory requirements in order to ensure overall best value including economic objectives; and

- Shifting to indigenous in-service support (ISS) after the warranty period on significant military equipment procured from offshore sources.

Getting industry involved early in the process has been a consistent theme in many of the procurement reviews conducted in a number of countries. The CADSI report also identified this requirement by indicating industry’s desire that the government “share annually, with Canadian industry, the ongoing plan to equip the Canadian Forces, including project timing and budgets.” This is not done with any degree of consistency and not in the detail that would be helpful to industry. By way of comparison, Australia provides an unclassified version of its defence capability as recommended in the most recent procurement review. For Australia the plan is now published every two years and outlines military procurement plans for the next decade, “so that potential suppliers can make informed decisions about their own strategic business plans.” Developing such a plan in Canada is possible because the Department of Defence provides a 10-year investment plan to Treasury Board, which could be utilized in the same way that Australia provides a public defence capability plan. The new Defence Procurement Strategy has indicated that this will now be done in Canada effective July of 2014 and issued as a defence acquisition guide.

The involvement of industry in the procurement of military equipment really needs to begin as part of the capability development process through a vehicle like the Australian public defence capability plan. How often it is done is not as important as its being done on a consistent and regular basis, so that industry can plan accordingly and make long-term decisions. The argument against such early engagement would be that industry might choose to prepare for a capability that never becomes a priority. That is a risk, but regular updates would reduce the likelihood that a wrong decision would remain uncorrected. The more important issue in terms of getting early industry involvement is avoiding the military needing a capability and its defence industrial base having no capacity to provide that capability, because it was unaware of the requirement and the need to make its own investments to provide the capability. Hopefully a Canadian defence acquisition guide will address these issues, because it is particularly relevant in today’s environment where platforms and systems are becoming more technologically sophisticated. As Robert Wylie notes, “local industry’s capacity to repair, maintain and adapt ADF equipment downstream in-service depends increasingly on the quality of its involvement in the supply of that equipment upstream in the procurement.”

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16 CADSI, 6.
17 Ibid., viii.
18 Ibid., 8.
20 See PWGSC, *Leveraging Defence Procurement to Create Jobs and Benefit the Economy*.
What is clear from comparing the Australian and Canadian approaches to procurement and where industry can engage in the process is that Australia has a more transparent process in terms of policy documents and capability requirements. As indicated earlier, Australia has issued a number of defence policies and defence industrial policies in the past decade. Canada has not. The Canada First Defence Strategy issued in 2008 is not really a defence policy statement and there has been no separate defence industrial policy issued in Canada at any time in the past. More importantly, it was issued before the financial crisis, when the government was running annual budget surpluses rather than budget deficits as it is today. The planned spending outlined in 2008 needs to be re-examined in light of the existing fiscal climate, and appropriate defence and defence industrial policy documents should be issued in order to allow the appropriate longer term planning to take place within government departments and by Canada’s defence industries.

A related but separate issue is that the Canadian practice of articulating industrial intentions for defence has involved setting out those intentions within a defence policy document. Efforts have ranged from a few paragraphs to a few pages and they have either been too general to be of much use to industry or simply told industry they were on their own. For example, the last time the government was dealing with fiscal challenges and reducing the defence budget, it issued the 1994 defence policy document that contained only one paragraph on industrial policy and essentially indicated that industry was on its own:

“The challenge of lower R&D and capital spending and more off-the-shelf purchasing will be to maintain and improve the industrial impact of those expenditures which remain. To this end, National Defence will work with Industry Canada, as well as Public Works and Government Services Canada, towards harmonizing industrial and defence policies to maintain essential defence industrial capability.”

In practical terms this has meant that the Canadian defence industry doesn’t really engage in the procurement process until the government develops a statement of requirement and goes out to industry with what is referred to as a Letter of Interest, which the DND sends out to industry to get an initial sense of whether or not industry could respond to such a requirement. Industry’s position has always been that it should be involved in the actual development of the statement of requirement, because it has the knowledge of what is technologically feasible. This would avoid circumstances in which companies that were considered world leaders in a particular capability area are unable to meet the mandatory requirements. The obvious question that emerges from this general description is: What needs to be done to improve this process? Below are some broad suggestions on what needs to be done.

**IMPROVING THE PROCESS**

Before anything else is done, the government should conduct a review of the entire procurement process in order to determine what is being done well and what needs to be fixed. This has been done in both Australia and the United Kingdom, resulting in tangible improvements in their processes. This is not to argue that their processes are without problems, but rather to note that their reviews identified areas for improvement — which have been implemented. More importantly for Canada, review would identify what we are in fact doing well, because Canada is implementing many aspects of the procurement process very effectively. The government would not have been able to procure and support the Canadian Forces’ engagement in Afghanistan for 10 years if its procurement process was as broken as some in the media like to imply. A recent Auditor General report indicated that, “We also concluded that National

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23 CADSI, 11.
Defence and PWGSC—in consultation with the Treasury Board of Canada Secretariat—are, to date, managing the acquisition of military ships in a timely and affordable manner following the National Shipbuilding Procurement Strategy."

The outcome of such a review, conducted by someone external to government but credible to both government and industry, would confirm or refute the requirement for improvements in the areas discussed below.

a. As articulated in the 2009 CADSI report, there is a need to involve industry earlier in the development of statements of requirements. Getting industry involved earlier will help alleviate developing requirements that are either technically impossible to achieve, or interpreted by industry as favouring a particular system process. Government should move forward with Project ACCORD and its ability to bring industry, academia and government together to develop and articulate capability requirements. This combined with the initiatives announced in the February 2014 Defence Procurement Strategy should ensure early industry engagement and avoid world leaders in a capability being unable to meet the CF requirements.

b. Related to the above requirement to have industry involvement earlier in the development of requirements is a requirement to move forward with the key recommendation in the Jenkins report—to favour Canadian industry where it makes sense to do so. This is consistent with what all of our allies do, but would likely require some amendment to the Agreement on Internal Trade and a move away from the notion that everything can be purchased in a competitive environment. The Defence Procurement Strategy indicates that Canadian industry involvement will now be part of the formal assessment process for considering proposals. This runs the risk of adding additional time to an already lengthy process. More importantly, the government must ensure that it has a process transparent enough to allow it to deal with the challenge of higher prices in the domestic defence sector.

c. Government needs to improve the costing process for major procurements. There are two aspects to this issue. First, there is room for improvement in the actual establishment of costs for new capabilities. Industry involvement early in the process of developing requirements will help this. Second and more importantly, government needs to recognize that costs estimates in the initial project proposal are rough order-of-magnitude costs that will change as the detailed requirements are established. This is an important issue because too often the Canadian Forces finds itself in a position whereby it must sacrifice numbers in order to meet a budget requirement that was imposed at the beginning of a process. The Joint Support Ship is a good example of the rough order-of-magnitude cost at the beginning of the process being the driving factor when the requirements are finally established, rather than the actual military requirement for three ships. This is not to argue that the budget should not be a factor in the decision, but rather to make the point that historically in Canada everyone gets fixated on the cost at the very beginning of the process, even though they know it is a rough order-of-magnitude cost. It is completely unrealistic to expect a cost developed in 2007 to be accurate in 2012, when there are so many factors that can change over that period for which the procurement planners have absolutely no control.

d. A second aspect of the cost issue is a requirement for government to be clear and transparent about what a cost estimate is supposed to include, and for how far into the future the lifecycle costs are to be projected. This would avoid the unrealistic position the government found itself in with the

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25 Project ACCORD was an initiative similar to Niteworks and RPDE in the UK and Australia respectively, designed to bring academics, industry and government together to provide solutions to military capability problems. Both the UK and Australian versions continue to operate. ACCORD was Canada’s trial and a report was completed on the trial in 2012. Nothing appears to have been done since the Options Analysis Study report was submitted to the DND in March of 2012.
F-35, where the DND presented the historical norm of 20 years for lifecycle costs, the Parliamentary Budget Officer presented costing over 30 years and included different assumptions, while the KPMG study argued that the estimate should be for 42 years and include costs that would be paid regardless of what equipment was purchased. Leaving aside the challenges associated with trying to establish the cost of anything 20 years into the future, a transparent costing framework would allow a common set of criteria to be used. Alternatively, a more sensible approach would be for the government to stop trying to establish sustainment costs so far into the future. As Kelly McParland noted in a National Post commentary, “There’s nothing clarifying about asking Ottawa to peer into a murky future and anticipate 30 years of costs for $26 billion worth of vessels. To demand exactitude in a project so large, vast and complex, spread over 30 years, is ridiculous . . . The equivalent exercise in the non-government world would be to require automobile builders to advertise the price of their vehicles based on the estimated lifetime cost, rather than the amount they actually charge you to buy it.”

Although this may not avoid criticism in other ways, the reality is Parliament and Canadians need to have confidence in the numbers that are being presented. That confidence does not exist today.

e. A separate procurement organization for military acquisition outside of the DND and PWGSC should be created. Although the author has noted elsewhere that this will not fix all of the problems with procurement, nor will it likely shorten the process significantly or necessarily improve accountability. The most important reason for creating a single organization is to leverage the limited number of people who actually have the knowledge and skillsets to implement complex military procurement projects. In this context the new Defence Procurement Strategy indicates there will now be a single defence procurement secretariat set up inside Public Works and Government Services Canada that reports to a “permanent Deputy Ministers Governance Committee (DMGC), which is the key decision-making body for the implementation of the Defence Procurement Strategy (DPS) and chaired by Public Works and Government Services Canada (PWGSC).” The Secretariat itself will undertake and/or support the following roles in this context

i. Ensuring early engagement in the procurement process;

ii. Developing and integrating value propositions into procurement processes;

iii. Developing options to support decision-making, based on consideration of tradeoffs involving capabilities, as well as costs and benefits to Canada;

iv. Using independent advice to strengthen the integrity of the procurement process;

v. Ensuring a coordinated approach to implementation of the Defence Procurement Strategy (DPS) across multiple departments, including PWGSC, National Defence, Industry Canada, Foreign Affairs, Trade and Development Canada, and Fisheries and Oceans Canada;

vi. Using an issue resolution approach to address problems quickly and effectively; and


None of the above is going to address or solve the shortage of people with the right skillsets for large complex procurements. Addressing that issue will take time and experience with large projects.

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27 DND. Defence Procurement Strategy.

28 Ibid.
f. The Jenkins report argued for the creation of a defence analytics capability and the government indicated in its 2013 budget that it supported this recommendation. The new Defence Procurement Strategy indicated this organization will be established and Diane Finley, the Minister of Public Works, announced the creation of an interim Board of Directors for the Institute on February 19th, 2014. This capability needs to be established quickly because it will take two to three years for Canada to even begin to recreate the knowledge and capacity that it once had in the 1980s.

Canada and its defence department are at a critical juncture. Budget pressures and the financial crisis have resulted in both a reduction in the defence budget and delayed the two percent annual increase to the defence budget promised in the CFDS. Difficulties in bringing announced procurement projects to fruition will make meeting the original cost estimates articulated in the CFDS near impossible. The challenge moving forward for government is that the military capability requirements articulated in the CFDS are not really that significant. In its simplest context the CFDS indicates the need to replace the equipment the Canadian Forces already has because most of the existing equipment is getting old and obsolete. Nevertheless, as it is presently articulated, the policy demands more money than the government has indicated it is prepared to allocate. Either the policy requirements need to change or the money allocated needs to increase if capability requirements articulated in the CFDS are to be achieved.

Leaving aside the policy — budget disconnect, within the context of procurement if the government is going to have any success in achieving its planned acquisitions, it will have to improve upon the existing process. This paper has identified a few areas where improvements should be made. These improvements are not radical in nature but should, if implemented, place the government in a space where criticisms of its plans are based on actual national security requirements and policy choices, rather than the silliness that has surrounded misguided cost estimate assumptions.
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**About the Author**

**Dr. Craig Stone** holds a BA in Economics from the University of Manitoba and an MA and PhD in War Studies from the Royal Military College of Canada. Dr. Stone joined the academic staff at Canadian Forces College (CFC) as an Assistant Professor in the summer of 2005 after 29 years in the Canadian Forces, the last five at CFC in the Strategic Studies Directorate. Dr. Stone became the Director of Academics in December 2008. He teaches Strategic Resource Management and Formulating National Security Strategy on the National Security Programme, Defence Management on the Joint Command and Staff Programme and Defence Decision-Making for the Master of Arts in Security and Defence Management and Policy Programme.

As a military officer in the Royal Canadian Artillery, Dr. Stone served in a variety of regimental positions in the First and Third Royal Canadian Horse Artillery regiments in Lahr, Germany, and Shilo, Manitoba. Employment outside the Artillery included two years as Military Career Counselor and Operations Officer in St. John’s, Newfoundland, one year on the operations staff at the Fourth Canadian Mechanized Brigade Group Headquarters in Lahr, two years as the Executive Assistant to the Commander, Land Force Central Area, Toronto, and two years as a staff officer with Chief of Force Development and then with Director General Strategic Planning at National Defence Headquarters, Ottawa, Ontario. Dr. Stone is a graduate of Canadian LandForces Command and Staff Course 8801 and Canadian Forces Command and Staff Course 21.
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