

Canadian
Forces
College

Collège
des
Forces
Canadiennes



CAF SUSTAINMENT TO OVERSEAS OPERATIONS

Lieutenant-Colonel Daniel Arcouette

JCSP 45

Exercise Solo Flight

Disclaimer

Opinions expressed remain those of the author and do not represent Department of National Defence or Canadian Forces policy. This paper may not be used without written permission.

© Her Majesty the Queen in Right of Canada, as represented by the Minister of National Defence, 2019.

PCEMI 45

Exercice Solo Flight

Avertissement

Les opinions exprimées n'engagent que leurs auteurs et ne reflètent aucunement des politiques du Ministère de la Défense nationale ou des Forces canadiennes. Ce papier ne peut être reproduit sans autorisation écrite.

© Sa Majesté la Reine du Chef du Canada, représentée par le ministre de la Défense nationale, 2019.

CANADIAN FORCES COLLEGE – COLLÈGE DES FORCES CANADIENNES

JCSP 45 – PCEMI 45
MAY 2019 – MAI 2019

EXERCISE *SOLO FLIGHT* – EXERCICE *SOLO FLIGHT*

CAF SUSTAINMENT TO OVERSEAS OPERATIONS

By Lieutenant-Colonel Daniel Arcouette

“This paper was written by a student attending the Canadian Forces College in fulfilment of one of the requirements of the Course of Studies. The paper is a scholastic document, and thus contains facts and opinions, which the author alone considered appropriate and correct for the subject. It does not necessarily reflect the policy or the opinion of any agency, including the Government of Canada and the Canadian Department of National Defence. This paper may not be released, quoted or copied, except with the express permission of the Canadian Department of National Defence.”

« La présente étude a été rédigée par un stagiaire du Collège des Forces canadiennes pour satisfaire à l'une des exigences du cours. L'étude est un document qui se rapporte au cours et contient donc des faits et des opinions que seul l'auteur considère appropriés et convenables au sujet. Elle ne reflète pas nécessairement la politique ou l'opinion d'un organisme quelconque, y compris le gouvernement du Canada et le ministère de la Défense nationale du Canada. Il est défendu de diffuser, de citer ou de reproduire cette étude sans la permission expresse du ministère de la Défense nationale. »

CAF SUSTAINMENT TO OVERSEAS OPERATIONS

“For want of a nail, the shoe was lost –

For want of a shoe, the horse was lost –

For want of a horse, the rider was lost –

For want of a rider, the battle was lost.”

- Benjamin Franklin

INTRODUCTION

Logistics has historically lacked the glamour of tactics and strategy that is associated with the combat forces.¹ However, it is an essential part of any deployed operation; whether it is supporting a Corps of 21,000 men in WWII or a battle group in Afghanistan, the contingent needs to be deployed, housed, fed, and resupplied. The size of the supporting element will obviously be task-tailored to the requirement. As we saw our forces reduced from WWII, throughout the cold war era, and finally during the Forced Reduction Plan (FRP) in the 1990's, the Canadian Armed Forces (CAF) have seen many changes in the way it sustains operations. The CAF no longer maintains the capacity it once did in the latter part of the 20th century, in which the majority of sustainment was conducted by uniformed members. As observed throughout the Afghanistan years, and the missions within that era and beyond, a significant amount of the operational support has been conducted by civilian contractors or obtained by coalition partners.

Further, the CAF has seen a great deal of political turbulence in the last 25 years. Beyond the deficit reduction measures of the FRP, there were the 2005 Defence Policy Statement that

¹ Moshe Kress, *Operational Logistics: The Art and Science of Sustaining Military Operations* (Norwell: Kluwer Academic Publishers, 2002), ix.

was optimistic, but was not backed by an increase in funding,² and General Hillier's vision of an Army Transformation that didn't get the financing from the Harper government.³ The 2012 Deficit Reduction Action Plan (DRAP) saw a planned 11% budget cut over three years,⁴ then 2018's Op GENERATION order to attempt to increase CAF's numbers by 3,500 regular and 1,500 reserve force members to meet the ambitious objectives outlined in Strong, Secure and Engaged (SSE).⁵ Recently, despite the initiative to augment CAF's capabilities to enable the list of concurrent missions outlined in SSE's famous "page 81", and the proposed augmentation of defence spending from \$18.9b to \$32.7b over ten years to achieve this, the 2019 Liberal government's budget effectively decreased DND's financing.⁶ With the various shifts in government initiatives, how can the forces plan for and maintain a robust sustainment system? With the continual changes in operational requirements and the shifts in governmental policy, the question then becomes does the CAF have the capability or desire to return to the days of self-sustainment, or is the current way of operating the new standard?

Through an analysis of how the CAF and other allied nations have evolved in the manner they sustain deployed missions, it will be demonstrated that the current method of outsourcing much of the support services is the most viable option for today's operations. This paper will

² Elinor Sloan, "Assessing Canada's Defence Policy," Canadian Global Affairs Institute, 2 October 2017. <https://www.cgai.ca/opedoctober22017>.

³ Colin Kenny, "Our Military badly needs repair," *The Globe and Mail*, 10 June 2008. <https://search.proquest.com/docview/382731248?accountid=9867>.

⁴ MacLean's, "Twin budget axes expected to carve \$2.5 billion out of DND," 30 September 2012. <https://www.macleans.ca/general/twin-budget-axes-expected-to-carve-2-5-billion-out-of-dnd/>.

⁵ Department of National Defence, "Joint CDS/DM Directive: Operation Generation," 28 May 2018, 11.

⁶ David Krayden, "Once again, the federal budget turns a blind eye to Canada's military needs," *National Post*, 27 March, 2019. https://nationalpost-com.cdn.ampproject.org/v/s/nationalpost.com/opinion/once-again-the-federal-budget-turns-a-blind-eye-to-canadas-military-needs/amp?fbclid=IwAR1oWUfBAUBe-iiE4fGUrUIWQE3ZVHw4TKf3iolKgeTz-o3iWAY69VUHNs0&_js_v=0.1#referrer=https%3A%2F%2Fwww.google.com&_tf=From%20%251%24s&_ampshare=https%3A%2F%2Fnationalpost.com%2Fopinion%2Fonce-again-the-federal-budget-turns-a-blind-eye-to-canadas-military-needs.

look at how the CAF has previously conducted sustainment, starting with the forces draw-down of the 1990's and the reduction of internal capacity to sustain operations. It will then address the early years of contracted support in the 2000's and the types of support that was outsourced. Through specific examples, the relative benefit of different means of contracting will be addressed. How current CAF operations are being sustained will also be discussed, to include strategic and tactical air and sea lift options, as well as how our allies conduct sustainment in theatre. Finally, the paper will conclude with a discussion of whether it is beneficial to continue with the current sustainment plan.

THE 1990's DRAWDOWN

"The decade of darkness" is what General Rick Hillier labeled the period that began with the Liberal government cuts in 1994. Faced with a \$40B deficit, Jean Chrétien cut 23% from defence spending.⁷ Thus, the forces were "deprived of the money it needed for training, postings, equipment, fleets, maintenance, sea days, ammunition use and a host of other things", while being mandated to augment participation in missions around the world.⁸ During this time, the regular force was reduced from a strength of 88,000 personnel to approximately 60,000.⁹ Such a drastic reduction hit logistics particularly hard, given the minimum number required to sustain the forces. Some would say it was the branch hardest hit by this process.¹⁰ This reduction

⁷ Gloria Galloway, "Hillier decries military's 'decade of darkness'," *The Globe and Mail*, Updated 25 April 2018. <https://www.theglobeandmail.com/news/national/hillier-decries-militarys-decade-of-darkness/article20393158/>; Christopher Spearin, "Not a 'Real State'?" *International Journal* 60, no. 4 (December 2005): 1097. doi:10.1177/002070200506000412.

⁸ Galloway, "Hillier decries military's 'decade of darkness'..."

⁹ Canada News Wire, "Defence Minister Announces Contract for Support to Deployed Military Operations," last updated 21 February, 2018. <https://search.proquest.com/docview/455192771?accountid=9867>.

¹⁰ Conrad, John. *What the Thunder Said: Reflections of a Canadian Officer in Kandahar*. (Kingston: Canadian Defence Academy Press, 2009): 9.

propagated a significant alteration to how the CAF conducted its operational support, increasing the requirement for outsourcing of sustainment services.

Early years of contracted support

Private sector support to the military is not a new concept. Defence firms have attempted to obtain a larger portion of CAF activities since the 1970s. In the 1980s, the Mulroney government privatized certain tasks, such as the “CF’s aerial fisheries protection duties.”¹¹ Not necessarily a logistical task, this demonstrates the early initiatives in CAF outsourcing services.

The early 1990s saw many western militaries outsource more support services, the US being a leader in this practice. The CAF was no exception to this growing trend. Predominantly due to the FRP and the reduction in support positions, contracted services such as logistics support and strategic airlift were becoming more common.¹² It was not deemed necessary for DND to own the equipment and employ uniformed personnel to provide non-military essential support services.¹³ Not commonplace at the time, contracted support was used on an ad-hoc basis and restricted to more secure environments, such as peace support operations.¹⁴

As the CAF found itself at a higher operational tempo in the post-cold war era, contractors were required to fill positions due to the lack of support personnel and equipment.¹⁵ Labeled alternate source delivery (ASD), according to the auditor general’s report, “ASD supports the long term strategy of divesting DND on non-core activities so that the department

¹¹ Spearin, “Not a ‘Real State’?...”, 1096.

¹² David Perry, “The Privatization of the Canadian Military: Afghanistan and Beyond,” *International Journal* 64, no. 3 (December 1, 2009): 668, <http://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;query=library/jrnart/3ZOV6>.

¹³ Spearin, “Not a ‘Real State’?...”, 1097.

¹⁴ Perry “The Privatization of the Canadian Military...”, 668. <http://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;query=library/jrnart/3ZOV6>.

¹⁵ *Ibid.*, 690.

can focus its resources and attention on operational capabilities.” Otherwise said, in order to get the most out of its investment, CAF would separate the “tooth” and the “tail”, in which CAF personnel would concentrate on being the war fighting specialists and conduct what is essential to the mission. The private sector would conduct the non-war fighting tasks such as transportation, supply services, food services, construction engineering, military training, IT and equipment maintenance, which consisted of \$3.5B, or one-third, of the DND budget.¹⁶

At the turn of the century the CAF began the use of “pre-facilitated” contracts. These contracts were pre-arranged to provide a range of support services, in whole or in part, to CAF when required.¹⁷ First, the contractor support program (CSP) in September 2000 was created to sustain the NATO stabilization force (Op PALLADIUM) in Bosnia-Herzegovina, and subsequently the contractor augmentation program (CANCAP) in December 2002.¹⁸ The outsourced logistical and support services to Atco-Frontenac consisted of 130 civilians, for a total contingency of 1,700 Canadians on the mission and 300 locally employed personnel.¹⁹ The two year contract worth \$83M, with a \$32M option for a third year, provided services such as material storage, transportation, bulk fuel management, water and electrical, food services, camp maintenance, and fire prevention and environmental protection services.²⁰ An effectiveness study conducted between December 2001 and February 2002 found that the use of contracted support enabled the CAF to use its human resources optimally, particularly in maintaining “flexibility

¹⁶ Spearin, “Not a ‘Real State’?...”, 1097.

¹⁷ Christopher Spearin, “Canada and Contracted War: Afghanistan and Beyond,” *International Journal* 69, no. 4 (December 1, 2014): 526, doi:10.1177/0020702014546703

¹⁸ Perry “The Privatization of the Canadian Military...”, 690.

¹⁹ Department of National Defence. “Operation PALLADIUM: Participation of the Canadian Forces in the Stabilization Force directed by NATO in Bosnia-Herzegovina”, last accessed 2 May 2019. <http://www.forces.gc.ca/en/news/article.page?doc=operation-palladium-participation-of-the-canadian-forces-in-the-stabilization-force-directed-by-nato-in-bosnia-herzegovina/hnmxlbfh>.

²⁰ André Tchokogué, Jean Nollet, and Julie Fortin, “Outsourcing Canadian Armed Forces Logistics in a Foreign Theatre,” *Canadian Journal of Administrative Sciences / Revue Canadienne des Sciences de l’Administration* 32, no. 2 (June 2015): 117. doi:10.1002/cjas.1315.

and operational capacity”. On a six-month rotation, the mission would have used 163 logisticians, or 326 soldiers over the course of a year. Using contractors cut 152 soldiers from the mission, who were able to be utilized for other operations, successfully filling the gaps formed by the shortage of uniformed personnel.²¹

In 2002, following the initial use of CSP during Op PALLADIUM, the CAF created the Canadian Forces Contractor Augmentation Program (CANCAP), signing a five-year contract with options to ten years, for a value up to \$400m with SNC Lavalin PAE Inc.²² This initiative provided 18 various logistical and engineering support services including supply, transportation, food services, engineering, communications and information systems services to the CAF on demand. The program had three objectives: “To provide the CF with additional operational flexibility through enhanced support capability; free up military personnel for employment where their military skills are most needed; and help preserve support-to-war fighting skills in CF support forces.”²³ Allowing for the CAF to improve the quality of life for its members, this augmentation of support services eased the strain on CAF soldiers during high tempo periods.²⁴ Although, not without its initial problems, the fact that the CAF tendered a second pre-facilitated contract indicates that it proved an effective method to enhance support services, freeing up uniformed personnel to conduct the “pointy end”, operationally focused tasks. Likewise, this arrangement would lead into augmenting support to Op ATHENA in Afghanistan.

In January 2010, it was reported that it cost approximately \$525 000 per year to keep a soldier in Afghanistan, which does not include strategic airlift, CANCAP civilian contractors or

²¹ Ibid, 118-119.

²² Canada News Wire, “Defence Minister Announces Contract...”,.

²³ Department of National Defence, *Evaluation of the Canadian Contractor Augmentation Program (CANCAP)* (Ottawa: Chief Review Services, June 2006), ii/vi.

²⁴ Canada News Wire, “Defence Minister Announces Contract...”,.

chartered helicopters.²⁵ Although due to the timeframe and the differences in the missions, a dollar for dollar comparison cannot be utilized, however the pre-facilitated contract could be seen as reducing costs, whether or not that was its purpose.

THE AFGHANISTAN YEARS

The shift from predominantly uniformed support to contractor augmentation would carry on throughout the following decade. The following section will discuss how the CAF was operationally supported, not only by CANCAP to fill the gaps of the National Support Element (NSE) support but also by coalition partners. This section will look at Op ATHENA, Canada's contribution to the NATO-led International Security Assistance Force (ISAF) and the shift in support structure when the mission migrated to Kabul as Op ATTENTION, the NATO training mission. Subsequently, Op HESTIA, the Canadian response to the 2010 earthquake, will be used as a case study to demonstrate that although the CAF is still capable of deploying independently for short periods, there are consequences when logistics support is not taken into consideration. The section will conclude with contracting challenges faced in this period.

Op Athena

Not only did CANCAP replace the CSP program on Op PALLADIUM, but also provided augmentation services in Kabul in 2003, assisting in the build of two camps and providing the full range of support services, less ammunition and health support.²⁶ Once the mission shifted to Kandahar in 2005, it was initially deemed too dangerous for CANCAP personnel to support the

²⁵ Matthew Fisher, "Canadians billed \$1.5b for mission," The Vancouver Sun, 9 January, 2010. <https://search.proquest.com/docview/243933686?pq-origsite=summon>.

²⁶ David Perry, "Contractors in Kandahar, eh? Canada's 'Real' Commitment to Afghanistan," Journal of Military and Strategic Studies 9, no. 4, Summer 2007, 12.

new phase of the campaign. CAF, supported by the US, soon realized that there were capability gaps for Canadian specific services. At its peak, the Canadian contingent had an established strength of 2 830, with an NSE of 300.²⁷ With the shortage of support personnel required further outside the wire, CANCAP was engaged to again augment the gaps to provide support services to the combat mission.²⁸ The requirement for additional support services was enough that between November 2006 and July 2007 the number of civilian contractors tripled from 95 to 266 personnel.²⁹ That they were successful demonstrates that outsourced support services provides additional flexibility, particularly in an operational mindset that logistics is an often under evaluated requirement.

Op Attention

The shift from Op ATHENA to Op ATTENTION imposed a greatly different concept of support. Authorized for 950 personnel³⁰ and spread over ten locations, the CANCAP pre-facilitated services were not provided. In lieu of a separate NSE, the mission established a combined National Command and Support Element (NCSE) structure, consisting of 260 members over three camps.³¹ The primary means of real life support was established with the US through ACSA agreements, providing for all necessary support services, with the exception of

²⁷ Conrad, *What the Thunder Said...*, 21; Department of National Defence, "Joint task force Afghanistan," last accessed 3 May 2019. <https://www.canada.ca/en/department-national-defence/services/operations/military-operations/recently-completed/operation-athena/joint-task-force-afghanistan.html>.

²⁸ Mike Blanchfield, "Major Canadian contractor in Afghanistan cited for management deficiencies," *CanWest News*, 3 June 2008. <https://search.proquest.com/docview/461053842?accountid=9867>; Department of National Defence, "Canadian Forces Contractor Augmentation Program," last modified 6 July, 2018. <http://www.forces.gc.ca/en/news/article.page?doc=canadian-forces-contractor-augmentation-program/hnocfnif>.

²⁹ Blanchfield, "Major Canadian contractor in Afghanistan cited..."

³⁰ Department of National Defence, "Operation ATTENTION," last modified 18 November 2014. <https://www.canada.ca/en/department-national-defence/services/operations/military-operations/recently-completed/operation-attention.html>

³¹ Vincent Bouchard, "The National Command and Support Element supports our mentors in Afghanistan," *Department of National Defence*, last modified 6 July 2018. <http://www.forces.gc.ca/en/news/article.page?doc=the-national-command-and-support-element-supports-our-mentors-in-afghanistan/hi2t5kww>

weapon systems, major end items and spare parts.³² On the British camp, a Standard NATO agreement (STANAG) was used. Similar to the ACSA, it is an agreement between NATO members for the use of goods and services.³³ There was very little Canadian owned equipment with the exception of a small fleet of Nyala armoured vehicles and Canadian specific supplies. A team of five personnel headed the Contract Management Cell (CMC) to coordinate camp services and contract with local industry for Canadian specific requirements, mostly armoured SUVs.³⁴ As demonstrated, although the CAF relied upon the US for support services in both Afghan missions, local contracting filled the gaps of Canadian specific requirements in the lower intensity training mission, whereas the CANCAP agreement was the more viable option in the robust combat campaign.

Op Hestia

During the Afghanistan years, Op ATHENA was not the only mission the CAF was involved in. In February 2010 over 12 000 CAF members were deployed, on exercise or preparing to deploy.³⁵ This included the current contingent of soldiers in Afghanistan, those in reconstitution and those on Ex MAPLE GUARDIAN and Op PODIUM.³⁶ This number also included over 2 000 personnel deployed to the Haiti earthquake relief effort Op HESTIA,³⁷ with

³² Department of National Defence. Identification Number 2005093159, *Memorandum of Understanding Between The Department of Defense of the United States of America and The Department of National Defence of Canada Concerning Acquisition and Cross-Servicing*. (DND Canada, 28 February 2007).

³³ Christiaan Davids, Robert Beeres, and Paul C Fenema, "Operational Defense Sourcing," *International journal of physical distribution & logistics management* 43, no. 2 (2013): 127, <http://www.econis.eu/PPNSET?PPN=750457880>

³⁴ Author's experience as Officer Commanding Contract Management Cell during, Roto 2.

³⁵ General Walt Natynczyk, "The Canadian Forces in 2010 and 2011 ~ Looking Back and Looking Forward," *Canadian Military Journal online*, Last modified 8 February 2011. <http://www.journal.forces.gc.ca/vol11/no2/03-natynczyk-eng.asp>.

³⁶ Major D. Matsalla and Lieutenant-Colonel D. Riviere, "Sustainment of Hasty Deployments – Lessons Learned from Op HESTIA," *Canadian Army Journal* 13, no. 3 (Autumn 2010): 88.

³⁷ Major Dave McQueen, "The DART and Op HESTIA – Canadian Forces: Helping in Haiti," *DART PPT Slide Show*, 15 October 201, 21.

a 271-person NSE.³⁸ Although the mission was successful overall, it took close to a month for the entire contingent to receive all the mission essential equipment required to conduct the operation. During the hasty deployment that was given only days to plan and prepare, logistical support was not properly considered. This should include prioritizing the proper logistical personnel and equipment, such as trained movements technicians and material handling equipment (MHE) to be shipped first. Instead, much of the essential equipment was removed from planned aircraft loads in order to send other supplies.³⁹ During this critical surge period, the CAF relied on multiple chinks of contracted Il-76 transport aircraft and two full-time charter (FTC) ships, which in itself, took several days to arrive in a crisis situation. Indeed, the second FTC arrived in Haiti on 24 February, when the crisis occurred on 12 January.⁴⁰ If key support personnel, such as theatre activation team (TAT) specialists that would normally deploy to open a theatre mission were not unavailable due to other commitments on other operations, the mission would have been better supported.⁴¹ This illustrates two points. First, logistical considerations are not at the forefront of operational planning, which could arguably be the key factor of why support positions took the greatest hit during the FRP years. Second, that provided proper logistical planning, the CAF can still deploy independently for short durations if the support personnel are made available with contractor support.

Challenges

http://webcache.googleusercontent.com/search?q=cache:62VIPanSeeQJ:www.epicc.org/uploadfiles/documents/Presentation2010/Haiti_DART_Presentation_for_Earthquake_Preparedness.pdf+&cd=19&hl=en&ct=clnk&gl=ca.

³⁸ Matsalla, "Sustainment of Hasty Deployments – Lessons Learned...", 89.

³⁹ Mills, Major K.J. Mills, "Logistics: Reducing Friction Through Understanding, Integration, and Ownership," Joint Command and Staff College course paper, Canadian Forces College, 2014, 21.

⁴⁰ Matsalla, "Sustainment of Hasty Deployments – Lessons Learned...", 91, 101.

⁴¹ Ibid., 96.

In 2006, Chief Review Services (CRS) published a report evaluating SNC Lavalin's performance with the CANCAP contract. Although outsourcing was never intended as a money saving measure, its goal was to deliver effective and efficient support services. Up to that point, the services were effective, but not necessarily efficient as the CAF spent a great deal of time and resources managing the contract. This could be due to the lack of experience in that domain. On the other hand, since the original contractor augmentation concept in Bosnia, that aspect has been improving.⁴² Additionally, in 2013 CAF renewed the SNC Lavalin contract as CANCAP II, inferring that contract management has been improved in this regard.⁴³ In April 2018, a procurement and contracting study was conducted among the Level 1s (L1) to identify gaps in contracting expertise.⁴⁴ It produced recommendations to enhance the proficiency of contracting personnel, which will greatly enhance CAF's deployed contracting capability.

Additionally, research has demonstrated other sources of possible risks to outsourcing sustainment. Labour disputes and contract issues could interrupt support. For instance, in Bosnia in 2001, 68% of ATCO-Frontenac's sustainment problems were due to employment conditions. The demand for danger pay and the possibility of committing unethical or illegal acts that could tarnish the institution's reputation have been seen as sources of dispute. An extreme example includes US private sector security personnel severely abusing Iraqi prisoners at Abu Ghraib.⁴⁵ Although the latter example can be labeled as the exception to the rule when it comes to contracting, these risks can be mitigated.

⁴² Department of National Defence, *Evaluation of the Canadian Contractor Augmentation Program...*, ii/vi.

⁴³ Dow Jones Institutional News, "SNC-Lavalin PAE Inc. to support Canadian military through CANCAP contract," last updated 24 August 2018. <https://search.proquest.com/docview/2092282745?accountid=9867>.

⁴⁴ Department of National Defence, 0000-0002 (LBI SO TRG 3), *Procurement & Contracting Study* (2 April 2018): 10-11.

⁴⁵ Spearin, "Not a 'Real State'?", 1094-1105.

CURRENT OPERATIONS

The Canadian Armed Forces webpage displays a total of 32 current operations, including ten domestic missions.⁴⁶ They all vary in size and scope, frequency and duration, and therefore are sustained in various ways. Some are domestic contingency missions, others are purely Navy tasks, that are relatively self-sufficient or for a short duration, others are UN or NATO tasks that vary from one person to 850. This section will focus on the overall support concepts of some of these missions and how they vary in their support structure.

Since the closure in Afghanistan in 2013, other than the various types of coalition support arrangements, such as ACSA, missions have relied heavily on commercial contracting for real life support (RLS) and goods and services to sustain the troops. In fact, between 2013 and 2017, the value of contracts let by CJOC increased by 133%, while the number of contracts increased by 317%.⁴⁷ This may be due to the several smaller sized missions that contract out support services instead of the pre-facilitated contract that had not used this capability since Op ATHENA. Although the CANCAP II option had not been yet exercised at the time of writing, CJOC is currently in the process of contract call-up for Op IMPACT and is studying how to leverage the program for Op REASSURANCE.⁴⁸ Op IMPACT, with a Canadian contingent in Iraq authorized up to 850 personnel,⁴⁹ is supported mainly by ASCA agreements and local contracts. Although there are integral CAF personnel, including some maintenance capabilities,

⁴⁶ Department of National Defence, “Current operations list,” last accessed 2 May 2019. <https://www.canada.ca/en/department-national-defence/services/operations/military-operations/current-operations/operation-edifice.html>

⁴⁷ Department of National Defence, 0000-0002 (LBI SO TRG 3), *Procurement & Contracting Study* (2 April 2018): 10-11.

⁴⁸ LCol David Carlson, CJOC J4 Contracts, Email “Solo Flight JCSP,” 29 April 2019.

⁴⁹ Department of National Defence, “Canada renews its military contribution to support stability in the Middle East,” Ottawa: 18 March 2019. <https://www.canada.ca/en/department-national-defence/news/2019/03/canada-renews-its-military-contribution-to-support-stability-in-the-middle-east.html>.

it can be understood why a pre-facilitated contract can be substantiated.⁵⁰ A similar construct is in place with Op REASSURANCE Latvia, which has 450 personnel in the Enhanced Forward Protection Battle Group, to include a NSE and a Task Force Latvia headquarters (TFL HQ) of 72 people. Although uniformed support is more robust, as there are green fleet vehicles, the support mechanisms are the same, for the exception of the OUTCAN personnel who live off the economy.⁵¹

Sustaining smaller missions, logistical support is obviously reduced as the requirement is not nearly as substantial. Op CROCODILE and Op SOPRANO for instance, are UN missions that consist of nine and ten people, respectively. With only one person in each mission dedicated to Canadian-specific requirements, CJOC directives indicate that UN personnel are supported by a UN Contingent Owned Equipment (COE) MOU concept.⁵² These personnel live in camp and receive a Mission Subsistence Allowance (MSA) for feeding and daily expenses.⁵³

Considerations

As with the previous section, there are considerations to outsourcing logistical support. This includes a possible loss of control of some military support activities, such as potential loss of integral skills, the potential to not adequately respond to urgent military requirements and subsequently the potential loss of quick mobilization.⁵⁴ There is also the potential for military to act under contractor command or vice-versa and also opposing views of organizational culture

⁵⁰ “CJOC J4 MEAP Regional Placemats,” *CJOC J4 Placement*, last updated 13 November 2018.

⁵¹ “CJOC Op REASSURANCE TFL Latvia” CJOC J4 Placemat, last updated 28 September 2018.

⁵² Canadian Joint Operational Command, *CDIO 4000 Series* (10 May 2018), 8.

⁵³ United Nations, “Mission Subsistence Allowance,” last accessed 2 May 2019.

https://www.un.org/Depts/OHRM/salaries_allowances/allowances/msa.htm

⁵⁴ Tchokogué, “Outsourcing Canadian Armed Forces Logistics...”, 116.

between military and civilians.⁵⁵ Another identified issue was retention due to contractors are seen as an alternate source of employment.⁵⁶ This latter point was indirectly identified in SSE, in which retaining skilled labour is a challenge in today's competitive work environment.⁵⁷

CAF's STRATEGIC AND TACTICAL LIFT CAPABILITIES

As has been mentioned above, CANCAP services were widely used to augment the lack of support personnel with the wide array of engineering and camp services. On deployed operations, CAF almost always deploys in a coalition context, most often when the US is the lead nation, hence often supported through MOU agreements, such as ACSA. It has also been demonstrated that there are various mechanisms of obtaining support external to the CAF's integral capabilities. Beyond the CAF's various means of being supported within theatre, it has various options to transport personnel and equipment into theatre. This section will look at the airlift and surface options.

Sea Lift

In the 1990s, the CAF relied on contracted sea lift to move large amounts of cargo.⁵⁸ This dependency was revised in the summer of 2000 when \$223M of equipment and three CAF personnel from Kosovo were held hostage on the contracted GTS KATIE due to a contract dispute.⁵⁹ Shortly following that incident, Canada acquired the services of a full time charter (FTC) to alleviate ad-hoc contracting. The services of the full time charter only lasted a few

⁵⁵ Ibid, 113-114

⁵⁶ Spearin, "Not a 'Real State'?", 1107.

⁵⁷ Department of National Defence, *Strong, Secure, Engaged: Canada's Defence Policy* (Ottawa: DND, 2017), 22.

⁵⁸ Perry "The Privatization of the Canadian Military...", 690.

⁵⁹ Department of National Defence, "HMCS Athabaskan Carries Out Boarding of GTS Katie," Last accessed 1 May 2019. <http://www.forces.gc.ca/en/news/article.page?doc=hmcs-athabaskan-carries-out-boarding-of-gts-katie/hnm18xq>

years, as it was not economically viable. Docked in the Port of Montreal, it cost the forces \$11 000 per day awaiting usage. Presently, CJOC holds a surface contract that can be called up to move lower priority freight and vehicles from operational theatres in Europe, the Middle East, and soon Africa.⁶⁰ With the limited usage of sealift, the contracting option is the most viable course of action.

Air Lift

CAF owns a limited number of airframes to support Canadian deployments throughout the world. Current assets include 5 x CC177 and 17 x CC130Js for cargo and 3 x CC150 Airbuses configured for strategic lift. Of the five CC177s, only two have regular dedicated lines of task for force generation and employment missions. This is due to lack of qualified flight crews and the high level of required maintenance. Of the 17 x CC130Js, the RCAF can only supply 2.5 lines of tasks dedicated to operational mission support. In addition, there is also a lack of aircrew, as commercial airlines tend to attract qualified pilots. The RCAF produces an annual Total Air Resource Management Plan (TARM), which identifies the forecasted requirement for the year and is generally short approximately six flights per year. However, this is based on regular sustainment operations, and not mission opening or closing. CJOC J4 Mov indicates that charter airlift is more conducive to European operations than to the Middle East, due to the nature of the environment.⁶¹ This indicates that a consideration of a mix of contracted and service airlift would be conducive to sustaining operations.

To compare the benefits of contracted airlift, a significant advantage of this method puts the onus on the private company to ensure the service is available, with a replacement airframe

⁶⁰ LCol David Carlson, CJOC J4 Contracts, Email, "ATARES," 9 April 2019.

⁶¹ Ibid.

available in the event of breakdown. This is particularly beneficial during surge periods.⁶²

Service airlift can break down at any time, and with limited spare airframe and crew, this causes substantial delays in operations. Equally, this disrupts sustainment to other missions as the tasks are to be reprioritized or while spare parts are being delivered to the location of the break down.⁶³

Another mechanism the CAF has recently adopted to enhance airlift capabilities is the “Air Transport and Air-to-Air Refueling and other Exchange of Services” (ATARES) program. Established in 2007, the Movement Coordination Centre Europe (MCCE), based in the Netherlands, coordinated a technical arrangement among participating nations to share strategic airlift assets.⁶⁴ In early 2018, Canada became the 26th NATO nation to join the program which uses non-monetary credit as a form of payment.⁶⁵ Nations are expected to balance this credit, or “equivalent flying hours” (EFH), with an equal amount of services given and received.⁶⁶ Since first using the program in April 2018, CAF had completed 24 exchanges, either consuming or producing services for a total of 100 EFH, producing a vast amount of cost savings. For example, the CAF could not support the transport of 180 soldiers from Quebec City to March AFB in California. Since the UK was flying into Calgary during the same timeframe, the British aircraft was diverted for a “cost” of 17 EFH, a flight that would have cost \$350,000 commercially.⁶⁷ Further to the ATARES agreement, CAF recently entered a technical arrangement for the

⁶² Ibid.

⁶³ Author’s experience as a Task Force Movements Officer 2009 – 2010 and as CJOC J4 Ops Africa 2017-2018.

⁶⁴ European Air Transport Command, “ATARES balancing: A debt paid is a friend kept – Strategic airlift shortfall and the need for coordination,” 8 October, 2013. Last accessed 23 April 2019. <https://eatc-mil.com/post/atares-balancing>

⁶⁵ “CAF enhances air interoperability with partners and allies,” *The Maple Leaf*. Last accessed 4 Apr 19. <https://ml-fd.caf-fac.ca/en/2018/01/9662>.

⁶⁶ CJOC J4 Mov Update PPT Slide, provided 19 April 2019.

⁶⁷ Matthew Wheildon, CJOC J4 Moves Joint Interoperability Movements Cell, Email “ATARES 2 Slide brief,” Feb 19, 24 April 2019.

Surface Exchange of Services (SEOS) program. Also headed by the MCCE, the 23-nation membership coordinates various multi-modal surface transport sharing – road, sea and rail.⁶⁸ For overland exchange of services, the “currency” is a surface equivalent unit (SEU), which accounts for one sea container transported over 100 kms.⁶⁹ During Ex Trident juncture 18, Denmark ran a lead-nation concept in which they contracted sealift for multiple nations instead of several nations driving up costs by bidding on the same service.⁷⁰ These multi-nation air and surface lift options only enhance CAF’s options without necessarily adding to the procurement and maintenance of list assets.

HOW OUR ALLIES DO BUSINESS

It has been discussed that many Western nations’ militaries have faced the same post-cold war budget and force draw-down as the CAF has. The following section will briefly discuss the parallel effects the US and UK governments have imposed and their migration to commercial options. Although the sizes of the militaries are on a larger scale than that of DND, their situations are similar.

United States

As previously discussed, the US is the lead nation when it comes to contractor support to operations. Although the practice is not new, it has become the modus operandi in the 21st century. From WWII, in which five percent of the personnel were contractors, to 10% supporting Op DESERT STORM in 1991, by 2011 the civilian to military ratio performing support roles

⁶⁸Ibid.

⁶⁹ Movement Coordination Centre Europe – MCCE at a Glance, March 2018. Last accessed 1 May 2019. <http://mccc-mil.com/wp-content/uploads/2018/03/MCCE-At-A-Glance-Mar-2018.pdf>.

⁷⁰ Matthew Wheildon, CJOC J4 Moves Joint Interoperability Movements Cell, Email “ATARES; SEOS – 3 slide brief,” 26 April 2019.

was one for one.⁷¹ As with the Canadian government at the end of the cold war, the US cancelled weapon systems and initiated a force draw-down, along with the defence spending budget. Expected to do more with less, military effective strength was reduced from 2.1m to 1.4m, while eliminating 300 000 civilian positions.⁷² Any gaps in military capacity were to be offset with hiring contractors. This was also a political move, as deploying large numbers was not popular to the American people, and sending fewer troops appeased the population.⁷³ Stemming from the requirement for support services, the US initiated the Logistics Civil Augmentation Program (LOGCAP) to provide base camp operations and maintenance, fuel and water distribution, transport and laundry services. First developed in 1989, Kellogg, Brown and Root (KBR) won the contract and provided support throughout the 2000's in Iraq and Afghanistan. It is argued that the CAF, looking to draw from the flexibility of the LOGCAP concept, created CANCAP.⁷⁴

United Kingdom

With the same intent as its western allies, the UK has always used contractors in operations to a certain degree, particularly in the 1980s when Thatcher began a program to outsource non-core military functions. This included using commercial ships to transport equipment to the Falkland Islands. Similar to the CAF, the use of contractors augmented after the 1999 UK MoD defence review. Due to today's restrained resource environment, the military would not be capable of operating without contractors, in particular air and sealift.⁷⁵ Since that

⁷¹ Sid Ellington, "The Rise of Battlefield Private Contractors." *Public Integrity* 13, no. 2 (April 1, 2011): 136, doi:10.2753/PIN1099-9922130203".

⁷² Steve Zamperellie, "Competitive Sourcing and privatization: Contractors on the Battlefield: What did we sign up for?" *Air Force Journal of Logistics* 23, no.3 (Fall 1999): 11.

⁷³ Sid Ellington, "The Rise of Battlefield Private Contractors...", 138.

⁷⁴ Perry, "Contractors in Kandahar, eh?...", 5, 9-10.

⁷⁵ Christopher Kinsey, "Transforming War Supply: Considerations and Rationales behind Contractor Support to UK Overseas Military Operations in the Twenty-First Century," *International Journal* 69, no. 4 (December 1, 2014): 498-500, doi:10.1177/0020702014542814.

time, it is argued that the UK has achieved unparalleled efficiency and achieved a responsive system towards its sustainment activities by adapting to the outsourcing of services from the private sector.⁷⁶

In 2012, the MoD announced reductions of an additional 2 900 troops, to include 800 logisticians, by far the most of any corps in the forces. Called “redundancies” in the UK, the forces will diminish to 97 000 soldiers. Defence Secretary Philip Hammond said: ‘We had no choice but to reduce the size of the armed forces, while reconfiguring them to ensure they remain agile, adaptable and effective.’ Military had been ordered to find £4.7B in savings and plug a £38B equipment overspend.⁷⁷ Politically, the UK needs to look out for the well-being of its troops by using local contractors and reducing casualties, aptly coined as the “the body bag syndrome”⁷⁸ In compensation to these reductions, in 2015 the MOD signed a 13 year contract for non-military items such as food and medical supplies, storage and distribution services for the UK armed forces. MOD views the private sector a positive contributor to the military.⁷⁹

DISCUSSION

There are several benefits to outsourcing deployed logistical services. Civilian companies specialize in certain tasks and therefore can often provide better services, thereby creating efficiencies and cost reductions. The service can be outsourced for a certain amount of time and released when it is no longer required, therefore reducing costs by not maintaining a permanent

⁷⁶ Dan Goure, “Britain’s innovative military logistics,” *The National Interest* (23 May, 2016). <https://nationalinterest.org/blog/the-buzz/britains-innovative-military-logistics-16313>.

⁷⁷ Ian Drury, “Cutbacks shrink army to smallest size since Crimean War as Gurkhas bear the brunt of latest military cuts,” *Daily Mail*, last accessed 30 April, 2019. <https://www.dailymail.co.uk/news/article-2087787/MoD-cuts-Army-shrinks-smallest-size-Crimean-War.html>.

⁷⁸ Kinsey, “Transforming War Supply: Considerations and Rationales...”, 501.

⁷⁹ Goure, “Britain’s innovative military logistics...”.

integral capability. It is also less expensive than a permanent forces-owned option, as the man power and resources do not have to be continually paid or maintained.⁸⁰ Further, with military budgets continuously being in flux, and military procurement often a “troublesome political issue”, variation in allocation is a lesser factor.⁸¹

The challenge faced by the CAF in recent years is how to use military resources efficiently in the face of budget cuts and governmental shifts in priorities. Over the last 20 years, two major trends have characterized military logistics: adapting to new challenges stemming from an increasing number of foreign missions, and efforts to better control increasing costs in the context that traditional warfare has been conducted less frequently since the end of the cold war. Many western nations see private companies as more efficient in conducting sustainment to operations. Research argues that there are three reasons for outsourcing logistics: It is less expensive than self-supporting operations; the support billets can be reassigned to more military-oriented tasks; and it reduces the dependency on the host countries’ resources.⁸² The first two reasons have been discussed in detail. The argument that it costs less than employing military personnel depends on how the figures are analyzed. The original concept of pre-facilitated tasks was not intended to save money, but to augment a missing capability.

The “more teeth and less tail” philosophy that favours spending less on sustainment is also applicable to military equipment. The more equipment the CAF owns, the more costly it is to maintain. During peacetime or during a lull in operations, personnel and equipment are relatively idle— a cost that would not necessarily be required with task-tailored sustainment contracts. The military is expensive but it is inefficient by necessity. In garrison, soldiers do

⁸⁰ Tchokogu , “Outsourcing Canadian Armed Forces Logistics...”, 120-121.

⁸¹ Spearin, “Canada and Contracted War...”, 540.

⁸² Ibid., 113-115.

physical training, weapons handling drills and other necessary military training that takes time out of productivity.⁸³ A vehicle tech, for example will typically commit 16 hours of his work week on repairing vehicles, where as their civilian counterpart, who does not have such commitments will produce the full 35 hours.⁸⁴

Not only is contracted support quite essential in today's sustainment, so is working as a coalition; it is much more economical to mutually support. This is true in multiple aspects. First, Canada always deploys in a coalition context. Economies of scale dictates that if a lead nation builds a camp, it is economically viable to share the cost of camp services. Another aspect of asset sharing is airlift, where one particular example examined is the ATARES program. It would be irrational to fly fully or partially loaded cargo aircraft over a country that has a transport requirement going to a similar destination or, for that matter, to charter airlift when a country can conduct the tasks at no charge.

CONCLUSION

A mission's support structure will be adapted to the size and scope of the operation. Canada's military strength has evolved from the world wars, throughout the Cold War and, more relevant to the scope of this paper, altered the way the CAF conducts sustainment operations since the 1990s. The logistics corps was hard hit during the FRP in the 1990s, when the forces were reduced by approximately 28 000 personnel. The capabilities and the supporting budget led the CAF to rethink how it supports overseas operations. The CAF is not alone in this regard. Many western nations have faced the same post-cold war force reduction and budget cut challenges, sacrificing a portion of their uniformed "tail" support capabilities to concentrate their

⁸³ Conrad, *What the Thunder Said...*, 68.

⁸⁴ LCol J.N.M. Parent, *Rapsit et propositions d'actions alignement et amélioration productivité 2^e ligne*, Base de soutien de la 2^e Division du Canada Valcartier : dossier 12300-1 (Cmdt cie Maint), 25 mai 2016, 3.

positions toward the true military related tasks (the tooth). This is not an unrealistic way of operating. There are many advantages in doing so, such as transferring the responsibility to the contractor, efficiencies in expertise, and not maintaining idle equipment. There are also drawbacks, including differentiation of organizational culture and losing an integral capability. In the end, the benefits outweigh the risks for many reasons. Spearin (2014) also contends that contracting is “now an essential part of the CAF’s apparatus for overseas operations and has been recognized as such.”⁸⁵

Further to contracting, most of today’s missions rely on coalition support when the CAF deploys. Much of the RLS the Canadian deployed forces obtain today are from allied forces, largely through the US with ACSA or other partners with similar arrangements. In addition to how it sustains missions overseas, this paper analyzed how the CAF supports deployments and resupply in the context of strategic and tactical air and sea lift. It has been demonstrated that the air and sea lift capabilities the CAF owns are not sufficient to support all the tasks it currently supports. With today’s challenges of retaining qualified aircrews, continuous maintenance requirements, and inherent risks of breakage, it can be concluded that a combination of contracted support and allied assistance makes it unnecessary to augment internal lift capabilities.

Due to the relative size and scale of Canada’s missions and its international commitments, the CAF will never deploy alone on long-term operations. The CAF should retain its capabilities in short-term crisis management context and for dangerous “outside the wire” tasks. However, when there are commercial, coalition and UN agreement options, it is only

⁸⁵ Spearin, “Canada and Contracted War...”, 540.

efficient to consider these options during sustainment planning. The way forward in today's CAF is to maintain a combination of uniformed and non-uniformed support capabilities, in conjunction with coalition support. This will maintain autonomy for quick response as well as keeping options open to task tailor support to the size and scope of any given mission. This is not to say that the CAF could not do to a better job at leveraging more effective logistical and supply management systems and technologies; however that would be a subject beyond the scope of this paper and a topic for further research.

BIBLIOGRAPHY

- Blanchfield, Mike. "Major Canadian Contractor in Afghanistan Cited for Management Deficiencies." *CanWest News*. June 3, 2008.
<https://search.proquest.com/docview/461053842>.
- Bouchard, Vincent. "The National Command and Support Element supports our mentors in Afghanistan." *Department of National Defence*, Last modified 6 July 2018.
<http://www.forces.gc.ca/en/news/article.page?doc=the-national-command-and-support-element-supports-our-mentors-in-afghanistan/hi2t5kww>.
- Canada. Department of National Defence, 0000-0002 (LBI SO TRG 3), *Procurement & Contracting Study*, 2 April 2018.
- Canada. Department of National Defence. "Canadian Forces Contractor Augmentation Program." Last modified 6 July 2018.
<http://www.forces.gc.ca/en/news/article.page?doc=canadian-forces-contractor-augmentation-program/hnocfnif>.
- Canada. Department of National Defence. "Current operations list." Last accessed 2 May 2019.
<https://www.canada.ca/en/department-national-defence/services/operations/military-operations/current-operations/operation-edifice.html>.
- Canada. Department of National Defence. *Evaluation of the Canadian Contractor Augmentation Program (CANCAP)*. Ottawa: Chief Review Services, June 2006.
- Canada. Department of National Defence. "HMCS Athabaskan Carries Out Boarding of GTS Katie." Last accessed 1 May 2019.
<http://www.forces.gc.ca/en/news/article.page?doc=hmcs-athabaskan-carries-out-boarding-of-gts-katie/hnmxl8xq>.
- Canada. Department of National Defence. "Joint CDS/DM Directive: Operation Generation." 28 May 2018.
- Canada. Department of National Defence. "Joint task force Afghanistan." Last accessed 3 May 2019. <https://www.canada.ca/en/department-national-defence/services/operations/military-operations/recently-completed/operation-athena/joint-task-force-afghanistan.html>.
- Canada. Department of National Defence. Identification Number 2005093159, *Memorandum of Understanding Between The Department of Defense of the United States of America and The Department of National Defence of Canada Concerning Acquisition and Cross-Servicing*. DND Canada, 28 February 2007.
- Canada. Department of National Defence. "Operation ATTENTION." Last modified 18 November 2014. <https://www.canada.ca/en/department-national->

defence/services/operations/military-operations/recently-completed/operation-attention.html.

Canada. Department of National Defence. "Operation PALLAIUM: Participation of the Canadian Forces in the Stabilization Force directed by NATO in Bosnia-Herzegovina." Last accessed 2 May 2019. <http://www.forces.gc.ca/en/news/article.page?doc=operation-palladium-participation-of-the-canadian-forces-in-the-stabilization-force-directed-by-nato-in-bosnia-herzegovina/hnmxlbfh>.

Canada. Department of National Defence. "Canada renews its military contribution to support stability in the Middle East." Ottawa: 18 March 2019. <https://www.canada.ca/en/department-national-defence/news/2019/03/canada-renews-its-military-contribution-to-support-stability-in-the-middle-east.html>.

Canada. Department of National Defence. *Strong, Secure, Engaged: Canada's Defence Policy*. Ottawa: DND, 2017.

Canada News Wire. "Defence Minister Announces Contract for Support to Deployed Military Operations." Last modified 21 February 2018. <https://search.proquest.com/docview/455192771?accountid=9867>.

Canada NewsWire. "Increase to Defence Support Contract." Last accessed 1 May 2019. <https://search.proquest.com/docview/455650709>

Canadian Joint Operational Command, *CDIO 4000 Series*. 10 May 2018.

Conrad, John. *What the Thunder Said: Reflections of a Canadian Officer in Kandahar*. Kingston: Canadian Defence Academy Press, 2009.

Carlson, David, and Dexter Harris. "Sharing Sustainment Techniques and Practices During Maple Resolve 2017." *Army Sustainment* 50. ALMC, March 1, 2018.

Davids, Christiaan, Robert Beeres, and Paul C Fenema. "Operational Defense Sourcing." *International journal of physical distribution & logistics management* 43, no. 2 (2013): 116–33. <http://www.econis.eu/PPNSET?PPN=750457880>.

Dow Jones Institutional News. "SNC-Lavalin PAE Inc. to support Canadian military through CANCAP contract." Last updated 24 August 2018. <https://search.proquest.com/docview/2092282745?accountid=9867>.

Drury, Ian. "Cutbacks shrink army to smallest size since Crimean War as Gurkhas bear the brunt of latest military cuts." *Daily Mail*. Last accessed 30 April, 2019. <https://www.dailymail.co.uk/news/article-2087787/MoD-cuts-Army-shrinks-smallest-size-Crimean-War.html>.

Ellington, Sid. "The Rise of Battlefield Private Contractors." *Public Integrity* 13, no. 2 (April 1, 2011): 131–48. doi:10.2753/PIN1099-9922130203.

- European Air Transport Command. "ATARES balancing: A debt paid is a friend kept – Strategic airlift shortfall and the need for coordination." Last accessed 23 April 2019. <https://eatc-mil.com/post/atares-balancing>.
- Fisher, Matthew. "Canadians billed \$1.5b for mission." *The Vancouver Sun*, 9 January 2010. <https://search.proquest.com/docview/243933686?pq-origsite=summon>.
- Galloway, Gloria. "Hillier decries military's 'decade of darkness'." *The Globe and Mail*. Updated 25 April 2018. <https://www.theglobeandmail.com/news/national/hillier-decries-militarys-decade-of-darkness/article20393158/>.
- Goure, Dan. "Britain's innovative military logistics," *The National Interest*. 23 May 2016. <https://nationalinterest.org/blog/the-buzz/britains-innovative-military-logistics-16313>
- Kenny, Colin. "Our Military badly needs repair." *The Globe and Mail*. 10 June 2008. <https://search.proquest.com/docview/382731248?accountid=9867>.
- Kinsey, Christopher. "Transforming War Supply: Considerations and Rationales behind Contractor Support to UK Overseas Military Operations in the Twenty-First Century." *International Journal* 69, no. 4 (December 1, 2014): 494–509. doi:10.1177/0020702014542814.
- Krayden, David. "Once again, the federal budget turns a blind eye to Canada's military needs." *National Post*. 27 March, 2019. https://nationalpost.com/cdn.ampproject.org/v/s/nationalpost.com/opinion/once-again-the-federal-budget-turns-a-blind-eye-to-canadas-military-needs/amp?fbclid=IwAR1oWUfBAUBe-iiE4fGUrUIWQE3ZVHw4TKf3iolKgeTz-o3iW4y69VUHNs0&_js_v=0.1#referrer=https%3A%2F%2Fwww.google.com&_p_tf=From%20%251%24s&_ampshare=https%3A%2F%2Fnationalpost.com%2Fopinion%2Fonce-again-the-federal-budget-turns-a-blind-eye-to-canadas-military-needs.
- Kress, Moshe. *Operational Logistics: The Art and Science of Sustaining Military Operations*. Norwell: Kluwer Academic Publishers, 2002.
- Natynczyk, General Walt. "The Canadian Forces in 2010 and 2011 ~ Looking Back and Looking Forward." *Canadian Military Journal online*. Last modified 8 February 2011. <http://www.journal.forces.gc.ca/vol11/no2/03-natynczyk-eng.asp>.
- Maple Leaf, The. "CAF enhances air interoperability with partners and allies." Last accessed 4 Apr 19. <https://ml-fd.caf-fac.ca/en/2018/01/9662>.
- Matsalla, Major D and Lieutenant-Colonel D. Riviere, "Sustainment of Hasty Deployments – Lessons Learned from Op HESTIA." *Canadian Army Journal* 13, no. 3 (Autumn 2010): 87-103.

- MacLean's. "Twin budget axes expected to carve \$2.5 billion out of DND." September 2012.
<https://www.macleans.ca/general/twin-budget-axes-expected-to-carve-2-5-billion-out-of-dnd/>.
- Mills, Major K.J. "Logistics: Reducing Friction Through Understanding, Integration, and Ownership." Joint Command and Staff College course paper, Canadian Forces College, 2014.
- Movement Coordination Centre Europe – MCCE at a Glance, March 2018. Last accessed 1 May 2019. <http://mcce-mil.com/wp-content/uploads/2018/03/MCCE-At-A-Glance-Mar-2018.pdf>.
- McQueen, Major Dave. "The DART and Op HESTIA – Canadian Forces: Helping in Haiti," *DART PPT Slide Show*. 15 October 2010.
http://webcache.googleusercontent.com/search?q=cache:62VIPanSeeQJ:www.epicc.org/uploadfiles/documents/Presentation2010/Haiti_DART_Presentation_for_Earthquake_Preparedness.pdf+&cd=19&hl=en&ct=clnk&gl=ca.
- Parent, LCol J.N.M. *Rapsit et propositions d'actions alignement et amélioration productivité 2^e ligne*. Base de soutien de la 2^e Division du Canada Valcartier : dossier 12300-1 (Cmdt cie Maint), 25 mai 2016.
- Perry, David. "Contractors in Kandahar, eh? Canada's 'Real' Commitment to Afghanistan," *Journal of Military and Strategic Studies* 9, no. 4 (Summer 2007).
- Perry, David. "The Privatization of the Canadian Military: Afghanistan and Beyond," *International Journal* 64, no. 3 (December 1, 2009): 687-702
<http://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;query=library/jrnart/3ZOV6>.
- Sloan, Elinor. "Assessing Canada's Defence Policy." *Canadian Global Affairs Institute*. 2 October 2017. <https://www.cgai.ca/opedoctober22017>.
- Spearin, Christopher. "Canada and Contracted War: Afghanistan and Beyond." *International Journal* 69, no. 4 (December 1, 2014): 525–541. doi:10.1177/0020702014546703.
- Spearin, Christopher. "Not a 'Real State'?" *International Journal* 60, no. 4 (December 2005): 1093–1112. doi:10.1177/002070200506000412.
- Tchokogué, André, Jean Nollet, and Julie Fortin. "Outsourcing Canadian Armed Forces Logistics in a Foreign Theatre," *Canadian Journal of Administrative Sciences / Revue Canadienne des Sciences de l'Administration* 32, no. 2 (June 2015): 113–27.
doi:10.1002/cjas.1315.
- Tuttle, William G.T. Jr. *Defense Logistics for the 21 Century*. Annapolis, MD: Naval Institute Press, 2005.

United Nations, "Mission Subsistence Allowance." Last accessed 2 May 2019.
https://www.un.org/Depts/OHRM/salaries_allowances/allowances/msa.htm

Zamperellie, Steve. "Competitive Sourcing and privatization: Contractors on the Battlefield: What did we sign up for?" *Air Force Journal of Logistics* 23, no. 3 (Fall 1999): 8 -17.
<https://search.proquest.com/docview/196457144>.