CANADIAN FORCES COLLEGE / COLLÈGE DES FORCES CANADIENNES
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EXERCISE/EXERCICE NEW HORIZONS

ACHIEVING REACH

FOR THE CANADIAN FORCES:

CAN WE GET THERE FROM HERE?

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ACHIEVING REACH FOR THE CANADIAN FORCES:

CAN WE GET THERE FROM HERE?

> "Strategic lift is a needed and necessary requirement for the Canadian Forces. We live in the second largest country in the world. We have a landmass of over nine million square kilometres. Air travel is a fact of life for all of us. It is how we go from Victoria to Halifax to Iqaluit to Toronto" – Prime Minister Stephen Harper February 9, 2007[1]

The announcement made by Prime Minister Harper implicitly recognizes the fact that we, Canada, are a large country and we, the CF, need strategic lift. This is needed not only for domestic responses but for international responses as well. The CF Vision calls for the ability to project and sustain CF Joint Task Forces, composed of integrated, joint, interagency capabilities, to conduct expeditionary operations abroad.[2] Given the recent announcement regarding the intention to procure strategic air and sealift and renewal of the tactical airlift fleet the CF will in time be more capable of arriving on the scene faster and moving more effectively within the Theatre of Operations. The nature of anticipated operations will require a better capability to make a rapid transition to operations, and be efficiently sustainable for extended periods required. In this context, the ability to deploy and sustain forces far away from the national support base is known as "reach."

Two key components of reach are 'mobility' (a quality or capability of military forces which permits them to move from place to place while retaining the ability to fulfill their primary mission) and 'sustainability' (the requirement of a force to maintain

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[1] Canada. Government of Canada announcement.*Strategic Airlift Marks New Era for Canada* available at http://news.gc.ca/cfmx/view/en/index.jsp?articleid=275619 accessed 10 March 2007.

[2] Canada. Department of National Defence. Canada's International Policy Statement available at http://www.forces.gc.ca/site/Reports/dps/pdf/dps_e.pdf accessed 10 March 2007.

its operational capability for the duration required to achieve its objectives).[3] The first is directly related to airlift and sealift while the second is tied to logistical support. The aim of this paper will be to examine how new CF initiatives in the area of major equipment procurements can be best employed to provide the most effective, efficient "reach" in future. In particular, the use of these resources in conjunction with forward basing of logistical supplies and services will enhance the CF's ability to deliver reach and strengthen its ability to get there from here.

Why Strategic Lift is Needed by Canada

While acknowledging the PM's statement of February 2007 and our many deployments within Canada in support of major floods, forest fires, ice storms and rescue operations; more often, the CF has found itself involved in a significant number of international situations since the end of the Cold War. The demise of a stable bi-polar world has resulted in a world of smaller conflicts and wars highlighted by asymmetric warfare and the rise of non-state actors. In general, these conflicts have arisen far from Canada's shores and necessitated the procurement of expensive commercial airlift and sealift to get to these locales or required the CF getting assistance from our Allies (read the United States) to arrive into Theatre in a timely fashion. As such, the Canadian Forces has found itself deployed to varying degree in Bosnia, Kosovo, Eritrea, Haiti, Kuwait, East Timor, Israel, Lebanon, Afghanistan, Sudan, Somalia, Central African Republic, and the Congo. Less Haiti, the remainder of the locales listed, were all at a significant distance from Canada requiring the CF to acquire strategic lift resources to deploy and sustain itself.

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[3] North Atlantic Treaty Organization. NATO Glossary of Terms and Definitions. AAP-6lity (2006).

Added to this, is the unprecedented global media coverage of natural disasters and humanitarian crises that have awakened Canadian's desire to assist those who are suffering in their wake. This had the concomitant result that the CF was tasked to create a rapidly deployable medical and response unit. This need was the impetus behind the Canadian government's creation of the CF Disaster Assistance Response Team (DART). This unit has been deployed to assist people in the Honduras (1998), Turkey (1999), Indonesia (2005) and Pakistan (2005) suffering the affects of hurricanes or earthquakes. Although arriving to assist peoples in need, the CF were criticized by many for its failure to arrive quickly in the Honduras and Sri Lanka, ostensibly due to our lack of integral strategic airlift.[4] In contrast, the DART was deployed to Turkey complete and operational using commercially leased AN-124s within one week of the earthquake occurring in that country.[5] Thus, it would appear, the availability of strategic airlift made a dramatic impact upon the CF's ability to have an immediate operational effect, highlighting the requirement for Canada to consider acquiring this capability.

It can be expected that the requirement for the CF to intervene in crises of the natures listed above will not abate. The recent announcement of an increase in CF troop strength will likely heighten the Canadian government's desire to further involve us in global issues that affect Canadian national interests or values. As stated in the Defence

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[4] Dianne DeMille and Stephen Priestley. "*Do We Dither? Or Do We DART? – The Department of National Defence Needs a New List: 'Notes for Next Time"*, Canadian American Strategic Review January 2005 available at http://www.sfu.ca/casr/ft-column1.htm accessed 12 March 2007.

[5] Author's note: I was J4 Mov Plans at the time of this occurrence and made the necessai

Policy Statement – The International Security Environment at the Beginning of the 21st Century

> An increasingly interdependent world has tightened the links between international and domestic security, and developments abroad can affect the safety of Canadians in unprecedented ways. Today's front lines stretch from the streets of Kabul to the rail lines of Madrid to our own Canadian cities. The Government has made a commitment to respond to potential threats to Canadian security before they reach our shores.
> The fluid nature of the international security environment makes it difficult to predict the precise threats that we might face even five years from now. Nevertheless, in order to concentrate our efforts in areas where Canada can make a difference, the Government has decided to focus on failed and failing states. [6]

If one looks at the number of failed and failing states in the world, according to the Carnegie Endowment for International Peace Failed State Index (see Figure 1),[7] one can

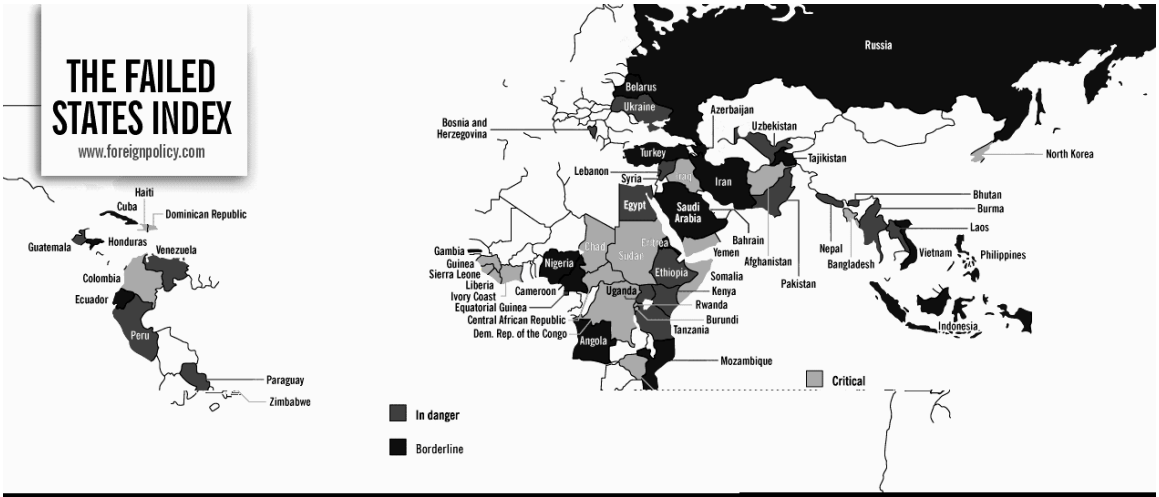

Figure 1. The Failed States Index.

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[6] Canada. Department of National Defence. *Defence Policy Statement – The International Security Environment at the Beginning of the 21st Century* available at http://www.forces.gc.ca/site/reports/ dps/main/01_e.asp accessed 16 April 2007.

[7] Carnegie Endowment for International Peace. Foreign Policy & the Fund for Peace. *The Failed States Index* July/August 2005 available at http://www.foreignpolicy.com/ story/cms.php?story_id=3098 accessed 17 March 2007. np.

immediately comprehend that the majority of these countries are a great distance from Canada. They are also considered a breeding ground for terrorists, drug barons and weapons arsenals and could affect almost 2 billion people.[8] If you also consider the

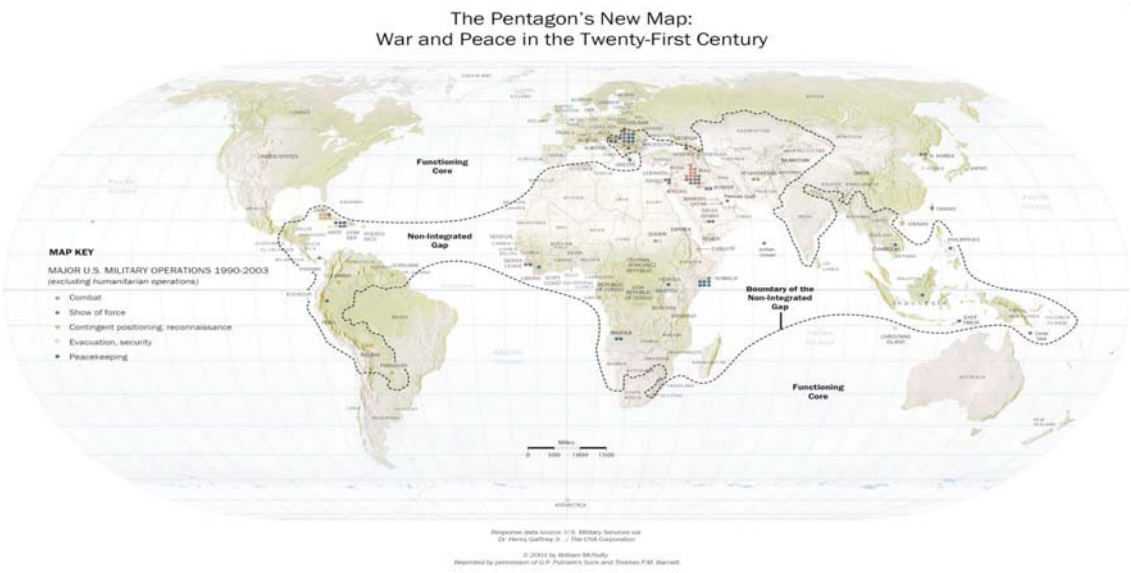

Figure 2. The Pentagon's New World Map.

global vision presented by Thomas Barnett, in *The Pentagon's New Map: War and Peace in the Twenty-First Century*, representing the new reality for US military planners, one notices the similarity of the maps (see Figure 2).[9] Canada is fortunate to be far from these acknowledged or arising trouble spots; however, this distance also makes it a challenge for the CF to deploy there to assist those in need. As shown above, the government has committed itself to take an active role to assist failed and failing states which only re-emphasizes the requirement for the CF to gain access to strategic lift assets.

CF Strategic Airlift and SALIS

[8] Ibid., np.

[9] Thomas P.M. Barnett, *The Pentagon's New Map: War and Peace in the Twenty-First Century*, G.P Putnam's Sons, New York, 2004, p.134.

The CF currently has limited strategic air assets. The five Polaris (Airbus 310-300) aircraft the CF owns have served the CF well since their acquisition in 1992-1993. They have been upgraded and reconfigured to give them greater utility for the CF's purposes and they have been instrumental in accomplishing the deployment, rotation and sustainment of CF personnel for the last fifteen years. They do have significant limitations though related to their inability to transport wheeled vehicles, their requirement for specialized unloading equipment and their inability to operate from austere airfields.[10] The latest decision to reconfigure two of these aircraft into air-to-air refuellers (AARs) will enhance the CF 18's capability to remain on station for longer periods of time and could be used to facilitate transoceanic flight for the CF 18s.[11] Unfortunately, this reconfiguration will also significantly reduce the CF's ability to deploy and sustain our troops using integral CF assets.

The CF has committed significant time and study into the issue of strategic airlift.[12] With the latest government announcement that the CF will be acquiring four C-17s from Boeing, part of the CF Strategic Lift requirement has been met. This will not meet all of the CF needs in this area but it will lessen our dependence upon commercially leased or borrowed Allied airlift to meet our needs. Even the good news of this purchase has been questioned by some who believe that the wiser purchase would have been the

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[10] Canada. Department of National Defence. "*Future Strategic Airlift Study" – Draft*". Ottawa, June 2000. p. 3.

[11] Canada. Department of National Defence. *Canada's Air Force, Aircraft: Polaris CC 150* available at http://www.airforce.forces.gc.ca/equip/cc-150/intro_e.asp accessed March 15 2007.

[12] Canada. Department of National Defence. *Future Strategic Airlift Study* – Draft. Ottawa, June 2000. Canada. Department of National Defence. *Statement of Operational Requirements – Future Strategic Airlift Project.* Ottawa, 2001.Canada. Department of National Defence. *Strategic Lift Concept Study and Analysis: for Project M2673 – ALSC.* April *1999*. Author's Note: These are but three reports that were made on this topic but does not include Strategic Tiger Team analyses (I was a member of two of these teams conducting separate analysis in 1999-2000).

purchase of AN 124-100s as a larger, more cost effective aircraft with a longer flight range.[13] Added to the purchase of the C17 aircraft is our participation in the NATO shared airlift project.

Canada, in conjunction with fourteen other NATO countries joined in the NATO Strategic Airlift Interim Solution (SALIS). This will allow Canada, as well as the other nations, access to six Antonov AN 124 aircraft.[14] This agreement will give Canada assured access to 125 hours of AN 124 flying time per year and alleviate some of the ad hoc reliance the CF has had on procuring strategic lift in the past. There is also discussion of forming a North American SALIS type program for use by the CF and US Armed Forces.[15]

CF Tactical Airlift

The CF has limited tactical airlift. There are currently thirty-two Boeing (C130 Hercules) in the CF inventory. They are a variety of ages and models but all are well advanced in flying hours due to the high usage the CF has made of these aircraft over their lifespan. The fleet consists of nineteen E-models dating from 1964 to 1968 and thirteen H-models dating from 1973 to 1992 and it is the CF primary aircraft for tactical airlift, tactical air-to-air refueling, and search and rescue. In particular, because deployments to areas overseas (or even deployments within Canada) are at such great

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[13] Herman A. Kurapov. *In Detail - Strategic Airlift - Boeing C-17and Antonov AN-124-100: A Comparison.* Canadian American Strategic Review available at http://www.sfu.ca/casr/id-antonov-1.htm accessed 17 March 2007.

[14] Canadian American Strategic Review. *Backgrounder – Airlifters – NATO's Strategic Airlift Interim Solution* available at http://www.sfu.ca/casr/bg-airlift-nato.htm accessed 15 March 2007. Author's note: the other NATO nations were Belgium, the Czech Republic, Denmark, Germany, Great Britain, France, Hungary, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovakia, and Slovenia.

[15] Canadian American Strategic Review. A Modest Proposal — Extending NATO's SALIS to North America available at http://www.sfu.ca/casr/mp-an124nato.htm accessed 15 March 2007

distances, the CF has accumulated astronomical hours on these aircraft. It is said, that the Canadian airforce is the leading expert on these airframes and routinely indicates to Boeing at how many hours they may expect to find flaws or mechanical failings in the Hercules systems since the CF airframes have more hours on them than any other military Hercules fleet worldwide.[16]

The requirement to find a replacement aircraft has been hastened by the finding of severe center wing structural damage once the E models reach the 50,000 flying hour mark. This has already required the pre-mature grounding of one of the airframes in service, effectively reducing the CF fleet to thirty-one airframes and then necessitating the further reduction in annual flying hours.[17] The newest government announcement indicates the proposal to replace the E models and older H models with seventeen new aircraft to support domestic and international deployed operations. The new models must be able to take off and land from unpaved short runways (914 meters by 27 meters), have an ability to load and unload palletized cargo from austere operating locations without the use of specialized loading equipment and provide initial delivery no later than 36 months after contract award with final aircraft delivery no later than 60 months after contract award.[18] The contract is expected to be in the range of $5 billion CAD including a 20-year in-service support contract. The acquisition of these tactical aircraft in conjunction

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[16] Canada. Department of National Defence. *Backgrounder – Tactical Airlift Project* available at http://www.forces.gc.ca/site/newsroom/view_news_e.asp?id=1823 November 24, 2005 accessed 25 March 2007.

[17] Canadian American Strategic Review. *Background – Airlifter Comparisons – C-130E/H Parts Swap Proposal* available at http://www.sfu.ca/casr/bg-airlift-c130-rebuild.htm accessed 25 March 2007.

[18] Canada. Department of National Defence. *Backgrounder - "Canada First" Defence Procurement - Tactical Airlift* available at http://www.forces.gc.ca/site/newsroom/view_news_e.asp?id=1970 29 June 2006 accessed 15 April 2007.

with the strategic airlift assets listed above will enhance the CFs mobility and sustainability into and within the Theatre of Operations.

Sealift – Joint Support Ship (JSS) and MIASSC

Canada does not currently possess an integral dedicated sealift capability. Any sealift for the CF has resulted from the improvised use of other CF ships or the reliance upon commercial shipping services. As an example, although their primary purpose is the replenishment of naval warships at sea, both HMCS Preserver and HMCS Protecteur, the CF's fleet of Auxiliary Oiler Replenishment (AOR) vessels have been tasked with supporting troops ashore on missions in Haiti, Somalia, Florida, the Bahamas and East Timor.[19] These two ships are at least thirty-five years old (Protecteur was built in 1969 and the Preserver was built in 1970) and are expected to be decommissioned in 2010. They were built to and are capable of transporting supplies and fuel, they were never designed to have, and do not have, the capacity of carrying and deploying heavy equipment or vehicles.

The initial project to replace these ships, the Multi-Role Support Vessel morphed into a new project entitled Afloat Logistics and Sealift Capability Project designed to replace the aging AORs, address the requirement for sealift capability and provides support to forces ashore.[20] To meet these requirements a minimum of three ships in the range of 35,000 tons is being considered. Each ship will maintain the current support capabilities found in the present AORs as well as providing approximately 1500 lane

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[19] Ray Szeto and Barry Cooper. *The Need for Canadian Strategic Lift*. Studies in Defence & Foreign Policy. The Fraser Institute, 1770 Burrard Street, Vancouver, BC. Number 5 / August 2005. p. 12.

[20] Canada, Department of National Defence. *Synopsis Sheet (Identification) Project M 2673 Afloat Logistics and Sealift Capability*. Ottawa, 1999.

meters[21] of covered space and 2500 lane meters of deck space and it will be capable of handling sea containers. In addition, the ships will be capable of providing command and control facilities as well as support including accommodations for a joint headquarters staff. Furthermore, a modular unit capable of providing a 60 bed hospital and dental facilities is to be incorporated into the design. Finally, the ALSC will be capable of supporting deployed forces ashore through the ability to self-load and unload their cargo and will possess an 'over the beach' capability in a benign environment.[22]

The CFs other available method of transporting its heavier equipment, vehicles, and supplies abroad has been to use commercial shipping companies. This option has been successful in the past and is a cost-effective method. This being said, there are possible issues with this method, those being that they are not built to military specifications, their availability and cost is uncontrolled especially during times of crisis and they are subject to civilian labour conditions and civilian disputes as occurred with the GTS Katie.[23]

Additionally, Canada has entered into a NATO sealift agreement somewhat like the NATO SALIS project described above. On 12 February 2004, Canada and eight other nations signed an agreement with the NATO Maintenance and Supply Agency

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[21] Authors' note: one lane meter is a strip of deck 2 meters wide or an area of deck one lane wide and one meter long, that is, 2 square meters (21.528 square feet) from A Dictionary of Units of Measurement, Russ Rowlett and the University of North Carolina at Chapel Hill available at http://www.unc.edu/~rowlett/units/using.html accessed 15 March 2007.

[22] Canada. Department of National Defence. *Concept of Employment Guidance – Afloat Logistics and Sealift Capability Ships*. Ottawa, 2000. p 10.

[23] Szeto andCooper. *The Need for Canadian Strategic Lift*…, p. 11. Author's note: For readers who may be unaware, in 2000 508 military vehicles, 500 tons of ammunition, and 390 containers of support equipment valued at $233M being brought home from Kosovo, were held aboard GTS Katie floating at sea outside Canadian waters until a contract dispute between the ship's owners and the chartering company was resolved.The incident ended when Canadian Forces Navy personnel from HMCS Athabaska stormed the ship and brought her forcibly into port.

(NAMSA) to provide NATO with strategic sealift capability for rapidly deployable forces. In the Multinational Implementation Arrangement on Strategic Sealift Commitments (MIASSC) agreement, the nations agreed to increase their multinational efforts to reduce the strategic sealift shortfalls for rapidly deployable forces by using a combination of fulltime charter and multinational assured access contracts. The nine nations have agreed to acquire a multinational capability package consisting of three roll-on/roll-off (Ro/Ro) ships on assured access, 1-2 Danish Ro/Ro ships on fulltime charter, residual capacity of four United Kingdom Ro/Ro ships and a Norwegian Ro/Ro ship on an ad hoc basis.[24]

A combination of all of these options will continue to provide the CF with sealift capacity and capability for the foreseeable future. It also opens up the question of how to organize the support system in Theatre to be cost effective and efficient. Even as the CF will transition into Theatres, it spends a considerable amount of money on premium airlift and sealift to meet immediate operational requirements. If a system of forward logistics bases was established that could meet some or all of our sustainment needs considerable cost savings could accrue to the CF.

Forward Operating/Sustainment Bases (FOSB)

Why would Canada need this capability?

Canada as a trading nation has global interests. As such, the Canadian government has decided to invest in a military that is expeditionary and globally deployable. The previous Liberal government under Paul Martin had made this a priority seeking to play a

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[24] NATO. *NATO Update - Agreement on Strategic Sealift Capability* 11 February 2004 available at http://www.nato.int/docu/update/2004/02-february/e0212a.htm accessed on 5 April 2007. Author's note: the other NATO countries were Norway, Denmark, Hungary, Italy, the Netherlands, Portugal, Spain and the United Kingdom.

part on the international stage, the Department of Foreign Affairs and International Trade's capstone document "A Role of Pride and Influence in the World" in 2005, was the result of a foreign policy forum that traveled across the country asking Canadians what they wanted to see from their government in this field. During Prime Minister Martin's Speech from the Throne in February 2005 he said that

> "Canadians want their country to play a distinctive and independent role in making the world more secure, more peaceful, more cooperative, more open. They want to see Canada's place of pride and influence in the world restored."[25]

This was echoed by the Minister of Defence in the Defence Policy Statement wherein he noted that "the Government recognizes that the Canadian Forces are a vital instrument of Canada's foreign policy…to help Canada convey its distinct values and particular approach to conflict resolution around the world.[26] These statements, when tied to the idea of assisting failed and failing states and taking a more active approach towards humanitarian assistance, reinforces the requirement for the Canadian Forces to be able to deploy and operate out of these areas.

The costs associated with deploying and operating in these theatres is considerable. The costs to deploy to these Theatres are expanding considerably partly due to the lack of integral CF sealift and airlift, increased fuel costs, as well as the distance and unique deployment challenges that were occasioned because of Afghanistan's land locked status. It can also be argued that the loss of CFB Lahr and the ability to forward

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[25] Canada. Department of Foreign Affairs and International Trade. *A Vision for Canada in the World*. World View Issue 21 Winter-Spring 2004 available at http://www.dfait-maeci.gc.ca/canada-magazine/issue21/01-title-en.asp accessed 13 March 2007.

[26] Canada. Department of National Defence. *Defence Policy Statement – The International Security Environment at the Beginning of the 21st Century - Foreward* available at http://www.forces.gc.ca /site/reports/dps/main/01_e.asp accessed 16 April 2007.

deploy from that location and use its supply stocks has also forced greater reliance upon the delivery of materiel to Theatres of operation from Canada. The cost breakdown for chartered sea and airlift over the nine-year period from Fiscal Year 1997/98 to 2005/06 is depicted at Chart 1. The airlift costs are further subdivided into three categories: airlift for primarily passenger transportation; airlift for primarily cargo transportation; and the FY 02/03 costs to pay the USAF for supporting the OP APOLLO deployment using C-17 Globemasters.[27]

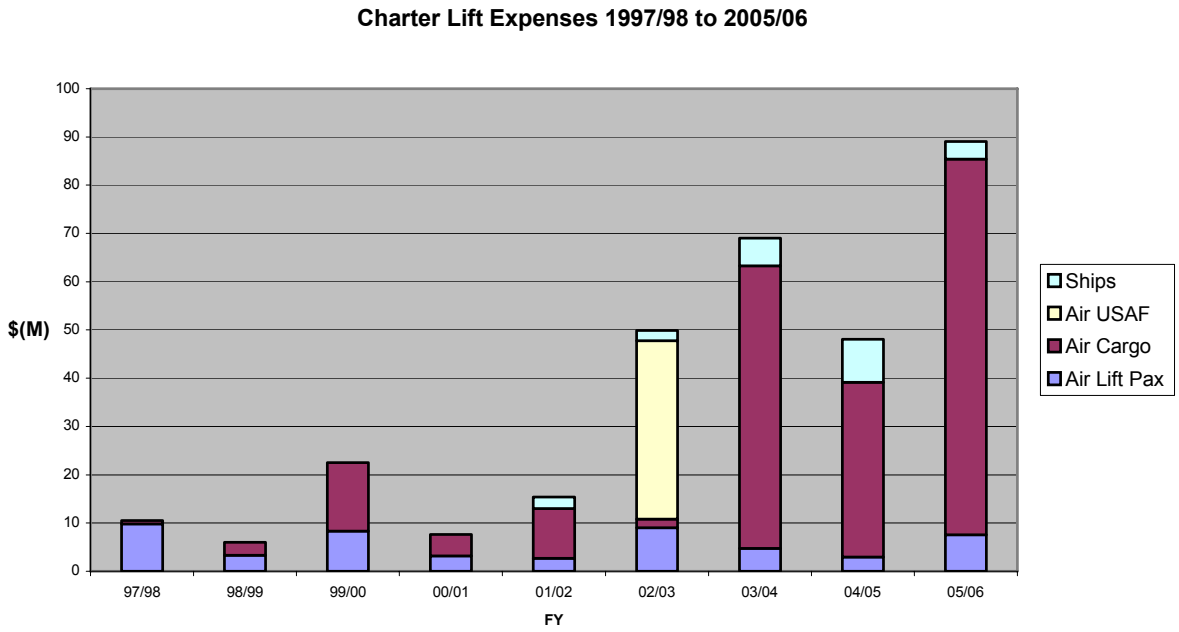

Chart 1 – Charter Lift Expenses 1997/98 to 2005/2006[28]

These costs have moved steadily upwards over this period during the CFs deployment into Afghanistan and subsequent relocation to the Kandahar region. These considerable costs lead to the question, would it be more cost effective and/or cost efficient to have a

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[27] Colonel F.M. Boomer. *Operational Support Hubs – Global Reach for the CF*. Draft Disucssion Paper for Comd CANOSCOM. Ottawa, August 2006. p. 7.

[28] Ibid., p.7.

pre-existing set of equipment, materiel and supplies located in FOSBs located closer to expected CF deployment areas?

The Operational Research Studies

A variety of studies were conducted at NDHQ involving the analysts at the Directorate of Material Group Operational Research who were requested to investigate this issue. It accumulated the data from various deployments over the preceding decade, and input the data into a variety of option analysis algorithms and ran numerous alternative models to determine the optimum strategic lift configuration for the CF. It was also requested to determine what impact greater use of sealift would have occasioned had the CF been able to take advantage of this mode of travel.[29] This particular mode, sealift, is known to have its limitations due to its speed of deployment, accessibility to certain Theatres due to port draught and its use generally necessitates advanced identification of operational requirements. This can be somewhat mitigated by methods such as having equipment and materiel already at the seaport and ready for sea transport.[30]

The modeling simulations by A. Ghanmi and R.H.A.D. Shaw - *Modeling and Analysis of Canadian Forces Strategic Lift and Pre-positioning Options* - took into account the movements of an Op ATHENA-like Task Force deploying to one of the Failed and Failing States, redeploying it back to Canada and then deploying it again to another failed state and then added an Op STRUCTURE-like DART deployment of

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[29] Ibid., pp. 7-8.

[30] Canada. Department of National Defence. *Army – A Soldier's Guide to Army Transformation Whole Fleet Management (WFM) Transition* available at bhttp://www.army.forces.gc.ca/lf/English/5_4_2_5.asp accessed on 02 April 2007. **Author's Note**: this was the idea behind the Army's Whole Fleet Management Program where, in general terms, one third of the vehicle fleet was being used in Theatre or was pre-positioned in Montreal awaiting deployment, one third was being used at the Canadian Manoeuvre Training Centre and one third was left with the units for individual and unit training purposes.

vehicles and equipment on a humanitarian mission into another one of the failed states within a three year cycle. It was a continuous random sampling of these countries using Trenton as the CF APOD and Montreal as the CF SPOD starting points and notional staging bases located at the following ports: Guantanamo Bay, Cuba; Dakar, Senegal; Derince, Turkey; Dubai, UAE; Mombasa, Kenya; Singapore, Singapore and Darwin, Australia. In addition, they included three potential forward operating bases holding the equivalent of a small ROROs (1200 lane meters) worth of equipment that simulates the OP ATHENA deployment. These locations were: Catania, Italy; Dakar, Senegal; and Dubai, UAE. The initial tests simulated deployment solely by air, or by a combination of sealift (from Montreal and the forward operating bases) to one of the selected SPODs and airlift (simulated using a combination of AN 124-100s and IL 76s) from the SPOD to final destination to find the most cost-effective combination. All SPODs selected were proven cost effective when considering deployment to regional locations. Guantanamo Bay provides excellent coverage for both Central and South American destinations. Use of Derince represents the cost-effective movement solution for locations in Europe, portions of the Middle East and much of North Asia. Dakar was best for Western Africa locations while Mombasa provides coverage of the reminder of sub-Saharan Africa. Dubai is optimal for most of the Arabian Peninsula, in addition to Central and Southwestern Asia. Eastern and Southeastern Asia are best covered by Singapore port while Darwin provides coverage of Australia, New Zealand, and Melanesia.

However, when considering which route/mode of travel would be most time-effective, thus allowing for closure in Theatre in the shortest amount of time, Guantanamo and Dubai are no longer considered effective options. It indicates that

deployment by airlift directly from Trenton would be a more time-effective movement solution for locations in Central and South America and Eastern Asia. Dakar represents the time-effective SPOD for deployments to Western, Central and Southern Africa, while Mombasa provides this coverage for Eastern Africa. Use of Derince would prove time-efficient for deployments to locations in Europe, the Middle East, and the Arabian Peninsula, and much of Southern Asia. From the standpoint of time-optimality, deployments to Southeast Asia should use Singapore, as the intermediate SPOD, while Darwin provides coverage of Australia and portions of Melanesia only. While cost-effective regions exist for all deployment routes under consideration, there are no time-effective regions corresponding to Guantanamo Bay and Dubai. The closure times associated with deployments along these routes are completely dominated by other routes.[31] As such, should the Canadian military and, by extension, the Canadian government consider this a project for further study it would appear that the most advantageous locations to consider from both a cost-effective and time-efficient perspective would be Derince, Dakar, Mombasa and Singapore. Darwin, although having both cost and time saving opportunities, is best suited to service Australia and parts of Melanesia only (a part of the world that is relatively stable and well within the sphere and capability of Australia to manage).

It was also concluded that by pre-positioning some of the larger equipment in the CF inventory that is regularly used in operations, in particular, HLVW variants, there is the potential to significantly reduce closure times in Theatre as well as reduce the overall

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[31] A.Ghanmi and R.H.A.D.Shaw. *Modeling and Analysis of Canadian Forces Strategic Lift and Pre-positioning Options - Draft.* Defence Research and Development Canada—Centre for Operational Research And Analysis, National Defence Headquarters. Ottawa, November 2006. pp 5 – 12.

costs of deployment. This amount, once again, corresponded to the 1200 lane meters of equipment that was loaded on the second smaller RORO ship as part of the OP ATHENA deployment. Put in the context of OP ATHENA, pre-positioning of the HLVWs might have reduced the cost of deployment by up to 5 million $USD and reduced the closure time by 10 days.[32]

The next topic the Operational Research team tackled was sustainment. From their research they determined that 80% of the total airlift cost in their simulation would be attributable to sustainment.[33] This was modeled on the OP ATHENA operation, wherein sustainment to the land locked country was necessarily completed by air. This is not an unreasonable or unexpected result. Many of the CF operations are sustained via air for the complete duration of their deployment. This result highlights the significant costs attributable to resupply of the Canadian Forces expeditionary units but it also highlights an area that could potentially provide the most sizeable cost avoidance/savings to the Department.

FOSB Characteristics and Operations

The intermediate staging base as foreseen by the operational analysis study was limited in scope to the 1200 lane meters of equipment and materiel. If this idea is expanded to become a FOSB to include items that are likely to be needed or requested on future deployments (this information can be readily culled from the CFSSU system) and pre-positioned, it will allow more cost efficient and time effective delivery of this materiel. The current demand methods used by the CF operational units provide little

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[32] Ibid., pp. 18-19.

[33] Ibid., p. 16.

opportunity to use sealift, a less expensive delivery option. Additionally, the selection of the FOSB should correspond to cities with well-developed infrastructure that in turn would support local purchase of materiel for furtherance into Theatre. As an example, Canada had to pay premium airlift costs for the shipment of lumber from Canada into operational Theatres (Bosnia, Afghanistan, Haiti) when it was readily available locally.[34] Additionally, the FOSB could establish contracts within the local area for the repair of equipment. For instance, the contract in Dakar to paint CF armoured vehicles prior to shipment into the Sudan in support of OP AUGURAL and the African Union's Mission in Sudan (AMIS) was an example where high quality work was done locally at a fraction of the cost 202 Workshop in Montreal would have charged to accomplish the same production.[35] Once in operation the FOSB would be a transitional storage and transshipment point for materiel moving into and out of Theatre. As such, it should be located near proximity to major commercial distribution nodes. By maximizing the use of sealift, it is logical that a large portion of the 80% of airlift costs for sustainment would be reduced or avoided. Likewise, the backloading of equipment to Canada could be arranged via sealift as well, once again, reducing overall costs to the Mission.

The FOSB would not come without a cost. The pay of the CF contingent in the FOSB awaiting operations would mitigate some of the cost savings achieved. However, by being posted to the locale for a significant period this would allow the crew to become intimately familiar with their location. They would be able to make local arrangements

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[34] Author's note: Incidents of this nature happen every deployment. In my capacity as J4 Mov Ops-2 and J4 Mov Plans in NDHQ, as well as my involvement with movements into Haiti and Afghanistan the CF invariably sends items that can be procured locally (lumber, water, sandbags, riveting, garbage cans etc). Not only does this waste airlift, the money saved on the airlift would generate significant economic benefits to the local population had we procured these items within Theatre.

[35] Boomer. *Operational Support Hubs…,*. p. 9.

for a variety of services that can facilitate a wide variety of options for the forces in transition whether it is warehouse space, rehearsal space, accommodations for a NEO in the vicinity, for supporting initial entry operations for a Battle Group or supporting CF navy ships transiting nearby.

Other considerations for locating the FOSB would be to locate in a country that already had ties with Canada. The use of Derince, Turkey as an Intermediate Staging Base for OP ATHENA was ameliorated due to it being a NATO country. If Dakar, Senegal (part of La Francophonie) and Mombassa, Kenya and Singapore, Singapore (parts of the British Commonwealth) were selected as trial locations for a FOSB there are historical, economic and social ties already established. These locations would appear to offer many advantages that could be further investigated including leveraging the use of Canadian embassy administration and communications.[36] By having access to these communication means the staff of the FOSB could assist CF Liaison and Recce Teams (both strategic and operational) with administration and movement within the Region. It is considered that the FOSB personnel would be complementary to the efforts of the Canadian Ambassador and the Defence Attaché[37] as they will be involved in any CF mission or operation in the area. These particular locations would also offer a locale that would allow transitioning soldiers a place to acclimatize prior to moving into the operational Theatre or a place to recuperate/decompress on the way out of Theatre.

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[36] Author's note: The Canadian Embassy in Turkey is located in Ankara vice Derince and in Kenya the Canadian Embassy is located in Nairobi vice Mombassa. The FOSB may not need to be co-located with the seaport/airport but this would be determined after a more detailed analysis is conducted.

[37] Boomer, *Operational Support Hubs…,* p. 12.

The size of the component would have to be determined but should require no more than three or four persons. A logistics contracting officer (Capt/Maj), a traffic technician (MCpl) and a supply technician (Cpl) would be a likely starting team. With connectivity to the Financial Management and Accounting System (FMAS) for tracking contractual payments, the National Materiel Distribution System (NMDS) for tracking of the inbound shipment of materiel and the CF Supply System (CFSSU) for visibility and availability of CF materiel, the team would be able to monitor and conduct materiel transactions. It would seem a logical to assign CANOSCOM this task as they would be able to backfill personnel as necessary in these billets. The component should also have the flexibility to be expanded and augmented commensurate with need when operations in its Region were being conducted.

Conclusion

The question "Can we get there from here?" of achieving "reach" for the CF is one of significance. The CF has been deployed to a wide variety of countries in various sizes and configurations many times in the past fifteen years. The CF has relied upon its own limited tactical and strategic lift assets in conjunction with commercial lift assets and US Armed Forces assets to accomplish this. Has it worked, yes! Has it been easy, no! Nor has it been cost effective or efficient. With the expansion of the CF and the wish by previous and current Canadian governments to play a more prominent international role, it is highly probable that this will mean more commitments by the CF into other countries. As demonstrated by this essay, failed and failing States are priorities for the Canadian government and the likely destinations for the type of capabilities the CF brings to the table.

Can we get there from here, yes! Although not having all of the strategic lift that the CF wishes it had, the newest initiatives are promising. The additional four C-17s and the announced replacement/upgrade to newer C130s will provide more reliable and more responsive airlift for our forces. When this is complemented by SALIS the CF has access to a significant airlift capability for deployment to and movement within the Theatre. Additionally, the new Joint Support Ship will provide some integral sealift capability to the CF. It will not be sufficient to fully move a major deployment; however, when the recent NATO MIASSC agreement supplements the new JSS capability we will be in a stronger position than we have been in the past to accomplish "reach" in the sealift mobility realm.

The operational research analysis demonstrates the cost-effectiveness and time-efficiencies to be gained by pre-positioning and the use of intermediary staging bases or facilities. To take this idea further and institute permanent or semi-permanent FOSBs is intuitively logical. If positioned appropriately, they would be a force multiplier for the CF providing a secure launch pad to ingress into Theatre and providing invaluable assistance to transitioning forces in a multitude of ways. There would be a limited cost to posting CF members to these locales (as well as pre-positioning materiel and equipment) but these would be more than made up by the indispensable service they could deliver. The question in this case "Can we get there from here?" becomes more problematical. With the closure of Lahr, Canada lost its only overseas support base. Camp Mirage has acted in this capacity for OPs APOLLO, ATHENA and AEGIS and may yet become an FOSB for the CF. The Intermediate Staging Bases at Derince for OP ATHENA and Dakar for OP AUGURAL were successful but temporary. A more permanent establishment may have

been able to leverage further savings from their strategic disposition. Although it could be argued that the idea of FOSBs are an old idea, having historic roots in British coaling stations and colonial outposts, to take the step of setting up a CF FOSB would be a large step for the CF support community to undertake with its risk adverse culture. However, the idea is gaining credence and is generating serious discussion at CANOSCOM so we may yet get there from here.

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