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CANADIAN FORCES COLLEGE

JCSP 34

MASTER OF DEFENCE STUDIES RESEARCH PROJECT

## **Canadian Forces Tactical Airlift Capability – Is it required?**

**By Lieutenant-Colonel C.D. Harris**

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## ABSTRACT

There is an increasing demand for air mobility resources as the Government of Canada (GoC) commits the Canadian Forces (CF) to operations at home, and more so, to international operations far from Canadian shores. The CF has evolved into an expeditionary force that relies on a fast, flexible air mobile capability that can deliver personnel, and materiel whenever and wherever required. Trends are rapidly emerging in world affairs that are difficult to predict and present a challenge to force developers who must plan military capabilities based on GoC vision and objectives for the future. There is significant pressure on governments to contribute to international conflict, violent or non-violent, but on the other hand, governments are faced with resource shortfalls, economic pressures, and the inability to keep pace with the rapid technology advances. The acquisition of a new capability must start now, if it is to be utilized in an operational role in the near future. It is a difficult and complex task to determine government's future objectives and then translate these requirements into a capability that will provide a relevant function for the CF for the long term. There has been a great deal of progress acquiring the latest, state of the art, strategic air mobile capability for the CF, but less focus has been given to tactical air mobile capability. This research examines the CF's requirement for tactical air mobility at the strategic level using the DIME (Diplomacy, Information, Military, Economic) model, at the operational level using the trends predicted in the Future Security Environment (FSE) research, and at the tactical level using the CSASS (Command, Sense, Act, Shield and Sustain) functions. Measured against the CF Capability Defence Initiative's mission categories, the deductions verified that the tactical air mobile capability was required more than the strategic air mobile capability. The tactical air mobile capability will be required well into the future and planners and force developers can be confident that they invested in the right capability.

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## CHAPTER ONE - INTRODUCTION

*Throughout the struggle, it was in his logistic inability to maintain his armies in the field that the enemy's fatal weakness lay. Courage his forces had in full measure, but courage was not enough. Reinforcements failed to arrive, weapons, ammunition and food alike ran short, and the dearth of fuel caused their powers of tactical mobility to dwindle to the vanishing point. In the last stages of the campaign they could do little more than wait for the Allied advance to sweep over them.*<sup>1</sup>

- Dwight D. Eisenhower

Herein lies an important historical lesson that must be acknowledged and adhered to by current and future planners of military campaigns or operations. The logistics inference in this quote points directly to a fundamental problem with movement, or more succinctly, the critical importance of mobility through the Lines of Communications (LOCs.) The vital consideration is to permit the combat forces to carry out their operation with the personnel, material, and equipment necessary for success. As military campaigns evolve, this concern is becoming more prevalent, and with the mix of current technology and a transforming global security environment there is an increasing desire to use aerospace capabilities to achieve this objective.

The Canadian Forces consider the term “movement” to mean an activity where personnel, equipment, and stocks change location, and mobility, as the capability which affects such movement.<sup>2</sup> Air mobility, therefore, is a key component of aerospace power because it has the capability to transport an individual soldier or the heaviest of tanks over thousands of miles in a single day or over difficult terrain that can not be accomplished by sea or land routes.<sup>3</sup> This capability of aerospace power is of utmost importance for the commander of a theatre of

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<sup>1</sup> Headquarters, Department of Army, “Logistics Quotes,” [www.hqda.army.mil/logweb/logistics\\_definitions.pdf](http://www.hqda.army.mil/logweb/logistics_definitions.pdf) Internet; accessed 2 February 2008 quotes Dwight D. Eisenhower in *British Army Doctrine Publication*, Vol. 3, Logistics (June 1996): 1-2.

<sup>2</sup> Department of National Defence, B-GJ-005-404/FP-000 *Joint Movement Support* (Ottawa: DND/MND Canada, 2003), 2-1.

<sup>3</sup> Clayton K. S. Chun, *Aerospace Power in the Twenty-First Century – A Basic Primer* (Colorado Springs: United States Air Force Academy in cooperation with Air University Press, 2001), 175.

operation who requires the ability to move quickly around the globe or within the tactical area of responsibility, at a moments notice. Indeed, Canada's Air Force has recognized this longstanding requirement and is revitalizing its capabilities to "rapidly deploy and manoeuvre forces, equipment, and supplies across the spectrum of conflict."<sup>4</sup>

Former Chief of Air Staff, Lieutenant-General Lucas, declared air mobility as "central to the Canadian Forces' ability to assist Canadians at times of disasters, to respond to crashes in remote and distant places and to supply Canadian Forces abroad."<sup>5</sup> The government of Canada's decision to acquire aircraft to address Canada's military air mobility requirements is arguably a breakthrough for the Canadian Forces. The acquisition of four new C-17 Globemaster III aircraft and the announcement to proceed with acquiring tactical lift aviation assets will undoubtedly provide the government of Canada with the flexibility and independence to act in support of Canadian interests. Canada must now acquire the right balance of strategic and tactical military airlift capability in order to have the "operational flexibility to rapidly and safely transport personnel, equipment and material wherever and whenever they are needed."<sup>6</sup> It is therefore timely to critically examine what capability the Canadian Forces requires in terms of air mobility and determine if the direction the force development is taking is in parity with these requirements. The Canadian Forces are in the midst of coordinating several significant capital acquisition projects necessary to improve and position their combat capability well into the future. The Air Force, in particular, has a significant portion of these costly projects that constantly juggle for prioritization.

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<sup>4</sup> Department of National Defence, B-GA-400-000/FP-000 *Canadian Forces Aerospace Doctrine* (Ottawa: DND/MND Canada, 2007), 42.

<sup>5</sup> LGen S. Lucas, "Air Mobility – An Essential Capability for Canada," [article on-line]; available from [http://www.airforce.forces.gc.ca/site/newsroom/news\\_e.asp?id+4023](http://www.airforce.forces.gc.ca/site/newsroom/news_e.asp?id+4023); Internet; accessed 2 February 2008.

<sup>6</sup> LGen S. Lucas, "Air Mobility – An Essential Capability for Canada," [article on-line]... [http://www.airforce.forces.gc.ca/site/newsroom/news\\_e.asp?id+4023](http://www.airforce.forces.gc.ca/site/newsroom/news_e.asp?id+4023).

Accordingly, this research will prove Canada's Air Force requires tactical air mobility capability to support the demanding role of the Canadian Forces in combat operations, at home and abroad. Strategic lift has gained overwhelming attention from the Department of National Defence (DND), Government of Canada (GoC), and the general public. It is possible this attention has led to the deterioration of tactical air mobility which has suffered over the last decade. To prove this thesis, the requirements for tactical air mobility will be analyzed against the three distinct levels of the Air Force Capability Structure: strategic, operational, and tactical.<sup>7</sup> At the strategic level, capability requirements for tactical air mobility will be explored using the planning model DIME (Diplomacy, Information, Military, and Economy.) The operational level will examine emerging trends in the political, military, social and economic, resource and environmental, and science and technology aspects (Future Security Environment trends) which impact on the operational requirement for tactical air mobility.<sup>8</sup> Finally, the tactical level requirement of air mobility will be evaluated using the CSASS (Command, Sense, Act, Shield, and Sustain) planning factors for the employment of this capability on specific tasks. Each of the levels of capability requirements will lead to a deduction and, in the balance of evidence, determine a requirement for a tactical airlift capability.

The CF has consistently been called upon to deploy both in Canada and abroad, across the full spectrum of operations. In most cases, these operations have been unpredictable and this characteristic has been prevalent in any discussions on future requirements or capabilities. To think too far forward can be highly speculative but it remains necessary to prepare for future conflict and military operations. Those in the CF responsible for force development will use this

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<sup>7</sup> Air Force Capability Structure FY 03/04 – FY 05-06, Memorandum from Comd 1 Cdn Air Div, 3000-1 (A7), 4 June 2002.

<sup>8</sup> Department of National Defence, *The Future Security Environment 2007-2030 – Part One* (Ottawa: DND/MND Canada, 8 November 2007- DRAFT), 1.

outlook to “maintain current activities, plan for a relevant force structure, and to invest in a CF that is prepared to meet the threats and challenges that are expected to emerge within a timeframe that goes out to 2030 and beyond”<sup>9</sup> Likewise, the research in this paper will focus on trends that will influence the requirement for tactical air mobility for the purpose of ensuring the CF, through its capability based planning process, can position and uphold a coherent force structure strategy well into the future. Therefore, the discussion of requirements will be reconciled and analyzed against the Canadian Forces’ recent engagement in capability based planning initiatives to prove that there is presently a requirement, necessity, and an opportunity to acquire tactical air mobile capability.

## **CHAPTER 2 – BACKGROUND**

### **Evolution of Airlift**

Mobility is an ancient concept in military conflict and, moreover, transportation to and around the battlefield dates back as far as transportation itself. A Historical Officer deploying to his first assignment with the Canadian Military Headquarters in London records his journey. His departure from Ottawa via Canadian National Railway began 13 December, 1940 via Montreal, Riviere du Loup and Moncton enroute to Halifax. On 15 December his ship cast sail from Pier 21 in Halifax and he very proudly declared his arrival on 25 December, 1940, as he disembarked the train in London, U.K.<sup>10</sup> In the early years, these were the only strategic modes of transport available to the many hundreds of thousands of troops who deployed for the same war.

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<sup>9</sup> Department of National Defence, *The Future Security Environment 2007-2030 – Part One...*,2.

<sup>10</sup> Directorate of History and Heritage, Canadian Military Headquarters (CMHQ) Reports (1940-1948), “Trans-Atlantic Voyage. Conditions in London ,31Dec 1940,” [http://hr3.ottawa-hull.ca/dhh/collections/reports/engraph/cmhq\\_e.asp?cat=7](http://hr3.ottawa-hull.ca/dhh/collections/reports/engraph/cmhq_e.asp?cat=7); Internet; accessed 12 April 2007.

Indeed, during the First World War, Canadian military flying was largely an adjunct of the Royal Flying Corps. Its primary role was air superiority over the Western Front and the fighter aircraft was considered paramount in this trench warfare battle. If anything needed to be carried by air, it was thrown in beside the pilot and, certainly, it was a quick mode for transporting senior officers and couriers bearing urgent messages in the two-seated trainer aircraft.<sup>11</sup>

When war broke out in 1939, there was only one transport unit in the RCAF with light aircraft and consequently it was predominantly used in a VIP transport role. The impetus to form a specialized air transport service came from the requirement to move 35,000 kilograms of cargo per week to build and maintain an isolated airfield in Goose Bay, Labrador; accessible only by air in the winter months.<sup>12</sup> Although, early in 1940, Ferry Command was organized to ferry urgently needed aircraft across the Atlantic Ocean to Britain and indeed, once the celestial navigation was mastered, it opened the way for supply runs, particularly mail, by air.<sup>13</sup> Canada's Air Force did not pursue air transport until 1941 when The North West Staging Route was developed to support Russia's war effort against Germany and more so, when U.S. joined the fight against Japan. While it began as a ferry route, it soon took on significant importance and proved "the ability . . . [of] engineers and pilots, communications and logistics personnel, both military and civilian, to overcome problems of terrain, weather, distance, and fatigue."<sup>14</sup>

Interestingly, there are very early signs of tactical air mobility training in Canada dating back to 1942 – 1943 when the 1<sup>st</sup> Canadian Parachute Battalion was organized and began parachute training jumps from Whitley aircraft, initially with large bags of mortars and other equipment. The Battalion training intensified and in 1943, the unit was jumping from an RCAF

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<sup>11</sup> Department of National Defence, A-JS-007-023/JP-001 *Air Transport Group: Newsletter Summer 1995* (Ottawa: DND Canada, 1995), 59.

<sup>12</sup> Department of National Defence, A-JS-007-023/JP-001 *Air Transport Group: Newsletter Summer . . .*, 59.

<sup>13</sup> Larry Milberry, *Air Transport in Canada* (Toronto: CANAV Books, 1997), 164.

Lockheed “Lodestar” immediately prior to their participation in Operation “OVERLORD,” the Allied invasion on continental Europe in 1944.<sup>15</sup> Once again, however, it was the requirement to deliver mail that truly caused the expansion of military air transport in Canada. In early 1943, with more than a quarter million Canadians overseas and the mail in chaos, the Army pressured the government to form a Heavy Transport Squadron and the Canadian Air Force witnessed the first trans-Atlantic mail run later the same year.<sup>16</sup>

Air Transport was officially formed as a command on 1 April, 1948 and began a scheduled domestic coast to coast transport service but was justly christened when the Korean War erupted in 1950. The requirements for air transportation included airlifting troops, equipment, and casualty evacuation on the return flights (back-haul.) This period also witnessed the acquisition of a heavy tactical transport capability (in the form of Fairchild C-119 Flying Boxcar) for artillery pieces and small vehicles and eventually became the “jump platform” for the army’s airborne troops.<sup>17</sup> In the 1960s, Air Transport Command acquired many new capabilities and expanded its role in the Arctic, as well as long-range strategic airlift and air-to-air refuelling. The Canadian Forces had also committed to tactical airlift with the acquisition of the CC-130 Hercules which “represented a quantum leap in airlift capability for the RCAF.”<sup>18</sup> Since this time the CC-130 has been involved directly or indirectly in virtually every major Canadian Forces operation and exercise.

Similarly, the U.S.A. discovered the importance of transport aircraft during the World Wars. The Commander of Military Air Transport Service spoke to the National War College in

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<sup>14</sup>Larry Milberry, *Air Transport in Canada* ...,162.

<sup>15</sup>Directorate of History and Heritage, Canadian Military Headquarters (CMHQ) Reports (1940-1948), “The 1<sup>st</sup> Canadian Parachute Battalion; Organization and Training, July 1942-June 1943,” [http://hr3.ottawa-hull.ca/dhh/collections/reports/engraph/cmhq\\_e.asp?cat=7](http://hr3.ottawa-hull.ca/dhh/collections/reports/engraph/cmhq_e.asp?cat=7); Internet; accessed 12 April 2007.

<sup>16</sup> Department of National Defence, A-JS-007-023/JP-001 *Air Transport Group: Newsletter...*,60.

<sup>17</sup> *Ibid.*, 61.

1947 where he asserted, “. . . we have come out of that war with an additional type, the transport plane, and that we should think in terms of bomber-fighter-transport—since they are all equally important—and they must be properly balanced . . . to conduct successful war operations.”<sup>19</sup> The airlift capability referred to was recognized during WWII, but reinforced for the senior military and political leaders of the U.S.A. in the Berlin Blockade, 1948-1949, which witnessed the first large-scale demonstration of the use of airlift “in the daily execution of US foreign policy objectives.”<sup>20</sup> While this historical lesson is clearly in the minds of United States Air Force planners, recent lessons from Afghanistan (Op Anaconda) demonstrated the value of airlift capabilities, but also shortcomings in the tactical airlift capability as it applied to forward operating with light or Special Forces.<sup>21</sup>

### **Air Mobility – A Function of Aerospace Power**

Aerospace power, as a component of the greater military power, is applied from the air to provide effects above, on, or below the earth’s surface. The desired effects translate into functions of an air force, one of which Canada considers “Move.”<sup>22</sup> Movement is critical for defence and security because of the necessity to manoeuvre forces unhindered from natural or man-made obstructions, while engaged in humanitarian relief or against an adversary. This function is comprised of air mobility and force projection.<sup>23</sup>

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<sup>18</sup> Vic Johnson, “A half Century of Airlift Excellence: The C-130 Hercules Turns 50,” *Airforce Magazine*, vol.28, no.4, Winter, 2004/2005, 33.

<sup>19</sup> Roger Launius, “The Berlin Airlift: Constructive Air Power,” (Extract from *Air Power History*, Spring 1989) in *CSC Aerospace Studies, Aerospace Warfare Theory and Command: Reading Material, AS/AWTC/541/CS-1*, 1- 15.

<sup>20</sup> Roger Launius, “The Berlin Airlift: Constructive Air Power,” . . . , 15.

<sup>21</sup> Anthony H. Cordesman, *The Lessons of Afghanistan: War Fighting, Intelligence, and Force Transformation* (Washington: CSIS Press, 2006), 61-62.

<sup>22</sup> Department of National Defence, B-GA-400-000/FP-000 *Canadian Forces Aerospace Doctrine* . . . ,20,37.

<sup>23</sup> *Ibid.*, 42.

Air mobility enables a military commander to move personnel, equipment, and material rapidly and over significant distances but equally important, it is used to sustain and “support effective application of their military effort.”<sup>24</sup> In this context, the operations are divided between strategic air mobility operations and battlefield air mobility operations. The former operations are conducted to move and recover resources between areas of operations, often referred to as inter-theatre airlift.<sup>25</sup> Battlefield air mobility operations are geared toward the tactical commanders, providing them with immediate and responsive airlift within the theatre or directly into the objective area, through air landing, air drop and other special delivery techniques. This type of operation is often referred to as intra-theatre airlift and also includes the air logistics support of all theatre forces, including those engaged in combat operations, the evacuation of casualties from forward locations on the battlefield, and the conduct of special missions.<sup>26</sup> Therefore, the capabilities provided by air mobility are known as strategic or tactical for the purpose of distinction in resources, missions, or training assigned to them.

Force projection is the other critical component of movements and it refers to the “rapid deployment of air forces in order to provide presence or influence for a specific operation, wherever and whenever it is needed.”<sup>27</sup> With the ability to rapidly deploy air forces over long distances, it enables Canada to project its influence globally and in an expeditionary capacity. This can be further enhanced through strategic or tactical air-to-air refuelling which increases the range, loiter time and flexibility of aerospace power.<sup>28</sup>

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<sup>24</sup> *Ibid.*, 42.

<sup>25</sup> Department of National Defence, B-GJ-005-404/FP-040 *Joint Doctrine Manual-Movement Support: Air* (Ottawa: DND/MND Canada, 2003), 2-1.

<sup>26</sup> Department of National Defence, B-GJ-005-404/FP-040 *Joint Doctrine Manual-Movement Support: Air...*, 2-4.

<sup>27</sup> Department of National Defence, B-GA-400-000/FP-000 *Canadian Forces Aerospace Doctrine...*,43.

<sup>28</sup> *Ibid.*, 43.

The distinction between strategic and tactical airlift is derived from the planning and employment considerations of a mission. These considerations are driven by the types of loads required on a specific mission, categorized as administrative, tactical, or contingency loads.<sup>29</sup> Administrative loads are used when there are no operational requirements for sequencing; consequently optimization of the aircraft's carrying capacity is the primary consideration. In this instance it is normally considered a strategic airlift. Tactical loads ensure the combat unit's personnel, equipment, and supplies are loaded in an order specified by the Task Force Commander to meet a sequence of arrival at destination in accordance with operational requirements. Both strategic and tactical airlift can be used to accomplish such missions depending on level of danger to air mobility forces in the theatre of operation. Contingency loads refer to combat troops with their equipment and supplies loaded and at the ready, so that on arrival at destination they can disembark fully prepared for combat. Such missions require tactical airlift, and thus, a tactical air mobility capability.<sup>30</sup>

### **State of Air Mobility in Canada**

According to military historians, there are a series of unfortunate events that have brought Canada to the current state of deficiency in air mobile capability. In the 1960's, Minister of National Defence Hellyer rearranged the military and established unification but in the end, indecisive strategic directives caused more problems than solutions. During the Prime Minister Trudeau era, Canada missed golden opportunities to capitalize on allied military relationships and subsequently, a role on the international stage. In 1984, the Canadian military was offered false hope when the Conservatives came to power with promises to expand the resources of the

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<sup>29</sup> Department of National Defence, B-GJ-005-404/FP-040 *Joint Doctrine Manual-Movement Support: Air...*, 1-2.

<sup>30</sup>*Ibid.*, 1-3.

Canadian Forces. Instead, the government committed the forces time after time while, in fact, reducing the force's resources and ultimately the force capabilities. Operation Airbridge in 1995 was the longest airlift in aviation history, surpassing the famous Berlin airlift in 1948-49. At its pinnacle, Canadian and allied aircraft supplied up to 95 percent of Sarajevo's relief supplies.<sup>31</sup> The trend to heavily employ air mobility forces has continued for the strategic and tactical airlift community into the current millennium. The culmination of the Canadian Forces' capabilities occurred in the early 2000s when, once again, the government committed the military to several operations (now in a combat role like Afghanistan as opposed to the peace-keeping missions in Cyprus) with antiquated equipment and no additional funding.<sup>32</sup>

Another factor which contributed to the current state of air mobility occurred in 1999, when the concept of the Expeditionary Air Force (EAF) emerged.<sup>33</sup> The concept evolved from the United States Air Force (USAF) which, in their case, was largely the product of the struggle between the high operational tempo and decline in available resources. Likewise, the Canadian Forces were largely optimized for overseas or expeditionary options because the strategic thinking was that combat-capable forces were required off-shore and not in defence of the homeland or North America.<sup>34</sup> Naturally, this would require extensive use of air mobility resources.

Canada's Air Mobility was, consequently, in an unstable condition for this level of operational commitment but has demonstrated a renewed focus on improving its capability.

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<sup>31</sup> Department of National Defence, A-JS-007-023/JP-001 *Air Transport Group: Newsletter...*, 2.

<sup>32</sup> J.L. Granatstein, *Who Killed the Canadian Military?* (Toronto: Harper Collins Publishers Ltd, 2004), 67-198.

<sup>33</sup> Dr. James Ferguson, "Over there, from here: Expeditionary Forces and the Canadian Air Force" [article on-line], available from <http://wps.cfc.forces.gc.ca/en/otherpublications/pubs/index.php?year=2003&publicationId=2&action=show#2003>; Internet; accessed 13 February 2008.

<sup>34</sup> Ferguson, "Over there, From here: Expeditionary Forces and the Canadian Air Force"..., 2-3.

Great strides are being made in establishing air mobile capability for the present and future.<sup>35</sup> Undoubtedly, the addition of the CC-177 to the Canadian Forces inventory will significantly improve the airlift capability and moreover, permit the government to act with further independence in the international political arena.<sup>36</sup> This newest technology in the Canadian Air Force repertoire is paramount to operating in the type of security environment now confronting the military. In addition, the new capability will permit the expeditious movement of heavy equipment, material, or passengers over much greater distances, whenever and wherever Canada may opt to do so.<sup>37</sup> But this common mind-set in both the public and military, may lead to neglect in another serious capability requirement for the Canadian Forces: tactical air mobility.

The Fraser Institute reported a serious deficiency in Canada's strategic lift capability and elaborated that the government must make a commitment to invest in replacements for the aging CC-130s.<sup>38</sup> The report is accurate in terms of needing to replace the CC130s and identifying there was a genuine need for a strategic lift capability, but it seriously confused the CC130 as a strategic capability versus a tactical capability. Indeed, the Canadian Forces has created the misconception of the capabilities by employing the CC-130 in a strategic and tactical role interchangeably. The CC-130 has now served over 40 years for the Air Force but is in dire need of replacement.<sup>39</sup> The CC-177 has already begun fulfilling the essential strategic airlift capacity and coupled with a continuing reliance on chartered (commercial) airlift, the Canadian Forces are comfortable with the strategic lift capability.<sup>40</sup> The CC-130 Hercules remains the sole platform

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<sup>35</sup> LGen S. Lucas, "Air Mobility – An Essential Capability for Canada," [article on-line]...

[http://www.airforce.forces.gc.ca/site/newsroom/news\\_e.asp?id+4023](http://www.airforce.forces.gc.ca/site/newsroom/news_e.asp?id+4023)

<sup>36</sup> LGen (ret'd) William Carr, "The CC-177 Globemaster III: Anything – Anywhere – Anytime," *Airforce Magazine*, Fall, 2007, 2.

<sup>37</sup> Dean Black, "Strategic Presence, Global Influence & the C-17 Globemaster," *Airforce Magazine*, Fall, 2007, 9.

<sup>38</sup> Barry Cooper, "Getting There From Here," *National Post*, 8 August 2005, A-16.

<sup>39</sup> Vic Johnson, "A half Century of Airlift Excellence: The C-130 Hercules Turns 50," ..., 36.

<sup>40</sup> Major A.A. Spott, CO 2 Air Movements Squadron, telephone conversation with author, 8 February 2008.

to sustain the tactical piece for the delivery of equipment, supplies, and troops as well as provide critical tactical air mobile capability to manoeuvring troops in combat.

In addition, the tactical air mobility capability suffered with the demise of the Canadian CH-147 Chinook helicopter in 1991. The Griffon helicopter eventually became the ultimate answer to tactical aviation and support for the army's fighting capability and mobility.<sup>41</sup> Unfortunately, in the ultimate aftermath of a controversial debate in the political and military arenas, the Griffon is labelled ineffective in providing the vital lift capabilities demanded by the combat forces in today's secure operating environment.<sup>42</sup>

The desire to increase the capability in air mobility has been in parallel with a strong voice for a sealift capability. While the Department of National Defence has completed studies that reported a requirement for a new ship to alleviate Canada's strategic lift concerns, it is likely a new vessel will have a multi-purpose capability<sup>43</sup> Currently, DND charters commercial freighter vessels for oversized or lower priority material which is consolidated for shipment until such time as it is worth the cost. The Canadian Forces diverged from a strong dependence on sealift after the GTS Katie incident in 2000, when sensitive Canadian Forces equipment was commandeered at sea while the ship's parent company sorted out a financial contractual dispute.<sup>44</sup> Consequently, there is a strong demand for integral airlift resources while Canadian

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<sup>41</sup> Department of National Defence, *Canadian Forces Utility Tactical Transport Helicopter (CFUTTH) Acquisition Project Statement of Operational Requirement* (Ottawa: Minister of Supply Services Canada, 1992), 2.

<sup>42</sup> Senator C. Kennedy, "When it Comes to Protecting Soldiers' Lives, Makeshift Measures Beat No Measures (And Honesty Beats Political Bullshit)," *Ottawa Citizen*, 27 September 2007 [article on-line] available from <http://sen.parl.gc.ca/ckenny/Oped%202007%20choppers%20needed%20in%20Afg%20to%20save%20soldiers.htm>; accessed 12 February 2008.

<sup>43</sup> Department of National Defence, *Strategic Lift Concept Study and Analysis: Utility of sealift capability of the proposed ship design for Project M2673-ALSC* (Ottawa: DND Canada, 1999), 1-2.

<sup>44</sup> Canadian Broadcasting Corporation, "New Problem Fuels Dispute Over Seized U.S. Ship," [http://www.cbc.ca/canada/story/2000/08/05/katie\\_fuel000805.html#skip300x250](http://www.cbc.ca/canada/story/2000/08/05/katie_fuel000805.html#skip300x250); Internet; accessed 12 February 2008.

troops are engaged in combat operations in a far-off, land-locked country, and limited assistance is solicited or provided from maritime resources.

## **The Future**

Canada has an intended and positive direction in acquiring the right capability to push the air force into the foreseeable future. The country is fortunate that it is remote from most international dangers and crises but on the other hand, it has a long haul to provide valuable resources when called on by the international community. In former MND Paul Hellyer's memoirs, he reminisced about the RCAF's unwillingness to invest in transport aircraft because they abhorred the idea of being seen as "truck drivers for the army."<sup>45</sup> Those times appear in the distant past as the Canadian Forces become more integrated and joint than ever before. Speed and flexibility are two key principles of airlift that are becoming more prevalent and critical to successfully deploy and sustain troops in a benign or hostile environment.<sup>46</sup> The Canadian Air Force is organizing its air mobility power to strengthen this commitment and prepare it to further integrate with land and maritime forces contributing to joint, combined or the whole of government operations.<sup>47</sup>

A historical account discussed the importance of strategic mobility from the British and American forces' perspective in 1963 and it favoured troops and their equipment being strategically placed around the globe to enable rapid response to any conflict.<sup>48</sup> Canada once practiced the same strategy but this trend has also vanished in favour of a highly ready, combat-capable, expeditionary force deployable by integral air mobility resources. Canada has already

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<sup>45</sup> Paul Hellyer, *Damn the Torpedoes: My Fight to Unify Canada's Armed Forces*: quoted in J.L. Granatstein, *Who Killed the Canadian Military?* (Toronto: Harper Collins Publishers Ltd, 2004), 225.

<sup>46</sup> Department of National Defence, B-GJ-005-404/FP-040 *Joint Doctrine Manual-Movement Support: Air...*, 1-1.

<sup>47</sup> Department of National Defence, B-GA-400-000/FP-000 *Canadian Forces Aerospace Doctrine...*,20.

invested in the strategic capability and has recently committed to additional tactical aviation resources. The replacement will contain the capabilities required for tactical air mobility according to recent government announcements to acquire the C-130 J models, which is “nearly a complete re-invention of the old Hercules.”<sup>49</sup> Furthermore, the government has committed to purchasing Boeing CH-147 Chinook tactical helicopters to satisfy the requirement for an intra-theatre medium to heavy lift capability.<sup>50</sup> There remains the negotiation with the manufacturer and Canadian Forces to secure the required technology on the CH-147 within the allocated project funding.

In terms of maritime capability, the “nascent Afloat Logistics and Sealift Capability (ALSC) project continues to explore a hybrid design which could meet replenishment, sealift, in-theatre support to joint forces ashore, humanitarian relief and other requirements.”<sup>51</sup> This goal was acknowledged in 2000 and was admirable at the time, but it remains in debate to determine if an acceptable compromise can be struck between competing demands from all three Canadian Forces elements: sea, land, and air. The Prime Minister announced in April 2004 the Canadian Navy would spend \$2.1 billion to acquire three Joint Support Ships but, to this date, capability requirements have not been resolved.<sup>52</sup> There is very likely to be additional, although limited, strategic lift in the form of a maritime capability.

Present Chief of Air Staff LGen Watt, in forecasting the future, aims to “enhance this great momentum . . . [shaping] the air force to meet the defence and security challenges of

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<sup>48</sup> Neville Brown, *Strategic Mobility* (London: Chatto and Windus Ltd, 1963), 10.

<sup>49</sup> Vic Johnson, “A half Century of Airlift Excellence: The C-130 Hercules Turns 50,” . . . , 36.

<sup>50</sup> Lucas, “Air Mobility – An essential Capability for Canada,” . . . , 2.

<sup>51</sup> Martin Chadwick, “The Strategic Mobility Conundrum,” *Canadian Military Journal* 1, no. 1 (Spring, 2000): 81.

<sup>52</sup> Sarah Gilmour, “JSS and Amphibious Ships Working Together: The Navy Plans for Future Additions,” [article on-line] available from [http://www.navy.dnd.ca/cms\\_news/news\\_e.asp?category=7&id=481](http://www.navy.dnd.ca/cms_news/news_e.asp?category=7&id=481); Internet; accessed 12 February 2008.

Canada in the 21<sup>st</sup> century.”<sup>53</sup> It is therefore, critically important to organize and prepare the current air force with the right defence capabilities to meet the future threats and challenges related to emerging trends in the near and long term. In essence, will the air force, through its projection of aerospace power, be capable of delivering on the expeditionary force concept with the ability to “deploy anywhere, anytime, and on short notice with a level of deployability that is predictable, sustainable, and supportable?”<sup>54</sup>

## CHAPTER THREE – DISCUSSION OF CAPABILITY REQUIREMENTS

### Overview

Canadian foreign policy was last reviewed in 2004 at which time the Prime Minister declared it the right time to do so because Canadian security, prosperity, and quality of life “stand to be influenced and affected by these global transformations.”<sup>55</sup> The Prime Minister also indicated the government must take a holistic look at foreign policy, the evolving world, and Canada’s contribution, including how to best promote Canadian values and interests to the world while contributing to international security and stability. This theme is preserved in this research to determine the capabilities Canada requires in the air force air mobility function.

Air mobility shall be examined at the strategic level of conflict planning utilizing the DIME model at this stage. The strategic level determines national or multinational (alliance or coalition) security objectives and guidance, and develops and uses national resources to

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<sup>53</sup> Dean Black, “New CAS looks to the Future,” *Airforce Magazine*, Fall, 2007, 4.

<sup>54</sup> Fred Petrie, “Securing Airlift for DND,” *Wings* 47, no.2, March/April, 2006, 39.

accomplish these objectives. Activities at this level also establish national and multinational military objectives, sequence initiatives, define limits and assess risks for the use of military and other instruments of national power, develop global plans or theatre war plans to achieve these objectives, and provide military forces and other capabilities in accordance with strategic plans.<sup>56</sup> At the operational level of conflict, campaigns and major operations are planned, conducted, and sustained to accomplish strategic objectives within theatres or other operational areas. Activities at this level link tactics and strategy by establishing operational objectives needed to accomplish the strategic objectives, sequencing events to achieve the operational objectives, initiating actions, and applying resources to bring about and sustain these events.<sup>57</sup> This level will be studied relative to the future security environment trends and how the trends will impact requirements for air mobility. The tactical level of conflict describes the level at which battles and engagements are planned and executed to accomplish military objectives assigned to tactical units or task forces. Activities at this level focus on the ordered arrangement and manoeuvre of combat elements in relation to each other and to the enemy to achieve combat objectives.<sup>58</sup> Consequently, this level will examine air mobile capability requirements against the functional model of operational planning, CSASS (Command, Sense, Act, Shield, and Sustain.)

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<sup>55</sup> Department of Foreign Affairs and International Trade, *Canada's International Policy Statement: A Role of Pride and Influence in the World- Overview* (Ottawa: Her Majesty the Queen in Right of Canada, 2005), i.

<sup>56</sup> Department of National Defence, B-GJ-005-300/FP-000 *Canadian Forces Operations* (Ottawa: DND Canada, 2004), 1-4.

<sup>57</sup> Department of National Defence, B-GJ-005-300/FP-000 *Canadian Forces Operations...*, 1-5.

<sup>58</sup> *Ibid.*, 1-5.

## Strategic Level

Diplomacy, Information, Military, and Economy are aspects of national power that are leveraged in the application of armed conflict to achieve desired strategic outcomes, through the effects of military operations against an adversary's vulnerabilities, and targeted against his will and capability to conduct war.<sup>59</sup> Indeed, the Government of Canada creates national policies and objectives, which its departments support by developing response options to address domestic or international crises that exist across these elements of national power.<sup>60</sup> DND and the CF work with many partners in Canada and abroad that help support the Defence mission, programs, and activities. The broad scope of the Defence mandate is reflected in the complexity and diversity of its partners and stakeholders.

One such partner that plays a significant part in diplomacy is the Department of Foreign Affairs and International Trade (DFAIT.) This department championed the Diplomacy portion of the latest International Policy Statement declaring Canada is well respected internationally for its strong diplomatic professionalism and actively partaking in the international arena.<sup>61</sup> The government has also committed to a new diplomatic strategy for a North American partnership which includes partnership with United States, shared global objectives, and advancing Canadian goals in the Arctic. There are a number of policy priorities that fall out of this new focus which, in turn, result in specific initiatives that impact the Canadian Forces air mobility.

One of the most significant changes is the concentration on counterterrorism. Canada and United States entered into bi-national planning for a coordinated response to crisis scenarios

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<sup>59</sup> United States Joint Forces Command, "Joint Forces Command Glossary," <http://www.jfcom.mil/about/glossary.htm#GoTop>; Internet; accessed 17 February 2008.

<sup>60</sup> Department of National Defence, B-GJ-005-500/FP-000 *Canadian Forces Operational Planning Process* (Ottawa: DNDMND Canada, 2003), 3-9.

<sup>61</sup> Department of Foreign Affairs and International Trade, *Canada's International Policy Statement: A Role of Pride and Influence in the World- Diplomacy* (Ottawa: Her Majesty the Queen in Right of Canada, 2005), 2.

such as terrorist acts or natural disasters within North America. Also in respect to a mutual strategy for the continent, the North American Aerospace Defence Command (NORAD) agreement was renewed with an obligation to enhancing North American security. In addition, DFAIT is pursuing Canada and United States cooperation in other initiatives of the North American partnership global objectives such as transforming NATO to become more effective in peace support operations and counterterrorism, and control of the proliferation of weapons of mass destruction. Part of the Foreign Affairs strategy to promote the message of the North American partnership is to “strengthen our public diplomacy capacity” which leads to elevating the Canadian profile through exposure in their country.<sup>62</sup> It also involves increasing numbers of missions to the U.S.A. which the Canadian Forces can accommodate through interoperability in the military services. A noteworthy domestic insertion in foreign policy is the Northern dimension which seeks to enhance sovereignty and security of the people and the Arctic and will most certainly impact the Canadian Forces. When tensions diminished after the Cold War stalemate, eight rather than five states (USA, Canada, Russia, and the Nordic Countries) surfaced as involved in Arctic affairs. Now these eight countries became the “Eight Arctic” states that are today involved in diplomatic issues of the Arctic region.<sup>63</sup>

The Government is also pursuing Canadian diplomacy on the international stage. Specific initiatives such as dealing with failed or fragile states involves promoting action in the “Responsibility to Protect” report and to more rapidly and effectively build peace in conflict and post-conflict situations.<sup>64</sup> Naturally, this is accomplished in association with regional organizations, including NATO, European Union, or perhaps, the African Union. Foreign

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<sup>62</sup> DFAIT, *Canada's International Policy Statement: A Role of Pride and Influence in the World- Diplomacy...*, 4-7.

<sup>63</sup> Carina Keskitalo, “International Region-Building: Development of the Arctic as an International Region,” *Cooperation and Conflict: Journal of the Nordic International Studies Association* 42, no.2 (2007): 194.

<sup>64</sup> *Ibid.*, 12.

Affairs combat the proliferation of weapons of mass destruction, in part, by participation in the G8, the International Atomic Energy Agency, and Proliferation Security Initiatives. The ultimate aim is to expand the G8's Global Partnership Against the Spread of Weapons of Mass Destruction to include other countries willing to support this Partnership's goals.

Another transformation of Canada's international policy is to strengthen the government's diplomatic reach. This incorporates building relationships with current and emerging global actors, emerging middle power states, failed and fragile states, and regions or sub-regions that are rising in economic, or "global stability" importance.<sup>65</sup> In all the aforementioned circumstances, it involves engaging regions beyond the North American continent, and normally involves missions or visits to strengthen relationships.

Political diplomacy has become a crucial ingredient in strategic planning and strategy has advanced into the political institution to espouse the broader vision or mission statements that reflect the core values and interests of the organization.<sup>66</sup> Certainly Canada's National Security Policy offers a strategic framework to ensure Canada is prepared for current and future threats but it also balances "the needs for national security with the protection of core Canadian values of openness, diversity and respect for civil liberties."<sup>67</sup> The focus of the National Security Policy is protecting Canada and Canadians at home and abroad, ensuring Canada is not a home base for threats to our allies, and contributing to international security. Logically, there are a number of key measures to examine where air mobility may be vital. For example, one such measure is that the Government Operations Center will provide coordination across various levels of

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<sup>65</sup> *Ibid.*, 22.

<sup>66</sup> Ann Fitz-Gerald and W.D. Macnamara, "A National Security Framework for Canada," *Policy Matters* 3, no.10, (October 2002): 3.

<sup>67</sup> Privy Council Office, *Securing an Open Society: Canada's National Security Policy* (Ottawa: Her Majesty the Queen in Right of Canada, 2004), vii.

government and key national players during national emergencies, activated through a national emergency management system. Similarly, public health provides national emergency services that require rapid and efficient movement to such organizations as the National Microbiology Laboratory in Winnipeg or conceivably, a requirement to respond to a health crisis anywhere in Canada. In terms of transportation security, Canada is strengthening marine security and continues to identify strategies to enhance aviation security, including air cargo. The final key strategic area is international security and has the most impact on Canadian Forces air mobility requirements. Here the Canadian government has committed to ensuring the “Canadian Forces are flexible, responsive and combat-capable for a wide-range of operations, and are able to work with our allies.”<sup>68</sup> In addition, Canada intends to use its experience in helping to restore peace, order and good government by assisting to develop failed and failing states. Canada will also continue to participate in counter – terrorism, preventing proliferation of weapons of mass destruction, and resolving intra and interstate conflicts.

The most current diplomatic influence to study in the Canadian context is the report from the Independent Panel on Canada’s Future Role in Afghanistan, headed by John Manley. The first of the five recommendations could certainly impact on the requirements for capability based air mobility resources in the Afghanistan theatre. It suggests Canada should assert a stronger and more disciplined diplomatic position regarding Afghanistan and the regional players. Diplomacy as part of a campaign will undoubtedly lead to numerous visits to promote the aspects Manley considered, such as cohesion in military – civilian combined efforts, good governance in Afghanistan and regional security and stability.<sup>69</sup>

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<sup>68</sup> Privy Council Office, *Securing an Open Society: Canada’s National Security Policy...*, x.

<sup>69</sup> *Report of Independent Panel on Canada’s Role in Afghanistan*, The Honourable John Manley, Chair (Ottawa: Her Majesty the Queen in Right of Canada, 2008), 37.

It is futile to have a formidable military force without a sound foreign policy to support the strategic objectives of government. In the past there was genuine concern that despite overseas objectives in the foreign policy document, the Canadian Army could not deploy offshore. Yet, Canadians and their governments have long considered the Canadian Forces an essential organization that garners attention in world affairs and is equally adept in performing in international conflicts.<sup>70</sup> Now, Canada would appear to have this capability well established but questions remain regarding the ability to meet all aspects of diplomacy in the strategic level of conflict.

Information Operations is rapidly advancing to the forefront of unified national security strategies. Since the end of the Cold War and the clear visualization of terrorism, radicalized religion, the proliferation and use of weapons of mass destruction as articles of trade, and the augmentation of informational power of such countries as Arabia, Brazil, China, India, Indonesia, Iran, Russia, and Venezuela, has made Information Operations a necessity. Governments realize in contemporary conflict that “inter-agency information-sharing and collaboration” must be core capabilities in their transformational security focus but it will only be effective if there is a universal appreciation of world conflict or crisis based on global foreign information acquisition and analysis.<sup>71</sup>

Information sharing, information exchange, and collaboration are three distinct aspects of Information Operations. Sharing is simply posting information for general access, whereas exchange refers to actively passing information between recipients. Therefore, collaboration proposes working together in harmony to implement the exchange and sharing of information.

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<sup>70</sup> Barry Cooper and Ray Szeto, “The Need for Canadian Strategic Lift,” *Studies in Defence and Foreign Policy – A Fraser Institute Occasional Paper*, no.5, (August 2005): 2.

<sup>71</sup> Robert D. Steele, “Information Operations: Putting the ‘I’ back into DIME,” available from <http://www.strategicstudiesinstitute.army.mil/pubs/display.cfm?pubID=642>; Internet; accessed 22 February 2008.

In essence, sharing may lead to exchange with may ultimately lead to collaboration. The Undersecretary of Defence for Intelligence in collaboration with U.S. Department of Defence has introduced modern Information Operations with the information-sharing piece broken down into three parts: strategic communication (the message), open source intelligence (the reality) and joint information operations center (the technology.)<sup>72</sup> Another part of their initiative is to act as a bridge network across multinational, multi-agency boundaries, enabling more intimate and respectful information-sharing operations with coalition partners and non-government organizations (NGOs.) They have recognized there is clearly a need for joint information-sharing and joint inter-agency collaboration for the business of Stabilization and Reconstruction. There is value in close open collaboration with NGOs using the DIME model for multi-lateral liaison particularly in the current global situations involving special operations and low intensity conflict.<sup>73</sup> It would be equally important for defence of Canada and aid to civil power where early information or knowledge can intercept potential attack or crisis. From this examination it is feasible air mobility can play a significant role. Firstly, information exchange and collaboration will undoubtedly require visits between nations and, at minimum, it will involve operations and exercises to promote inter-operability between nations. As well, air mobility can play a prominent role in stabilization and reconstruction efforts of a country in need or assisting Canadian agencies in domestic disasters or emergencies. A level of trust in the relationships will be critical for which inter-agency collaboration training, education, and practice must be enhanced in frequency, content and participation.

US Joint Forces Command have also identified actions required to achieve effects in the perception and influence domains of strategic communications as “physical actions to create

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<sup>72</sup> Steele, “Information Operations: Putting the ‘I’ back into DIME,”..., 8.

<sup>73</sup> *Ibid.*, 19.

information effects” and “strategic messaging.”<sup>74</sup> In the last decade and more, the world has encountered a dramatic change in the nature of the security environment. Throughout most of the 20<sup>th</sup> century, the synchronized application of the elements of national power (diplomatic, information, military, and economic) remained at the level of national strategic planners and decision makers. At the operational level, there were clear distinctions between the instruments of national power and their application in support of national interests but it began to blur while domestic and international expectations shifted. As a result, military forces have implemented formalized plans which emphasize non-traditional missions and relationships, expand contacts with the wider Interagency Community, and develop forceful concepts in the area of Information Operations.<sup>75</sup> Certainly, psychological operations have become more predominant in the special operations forces of the world. Often the strategic message is broadcasted by means of psychological operations and is delivered in the form of leaflets and other information messaging.<sup>76</sup> Air mobility is normally at the forefront of such operations whether in support of delivering the leaflets or supporting special operations forces. Likewise air mobility unquestionably contributes to the physical actions to create information effects. Worldwide excursions, assistance to stabilization and restructuring efforts, and humanitarian assistance are only a few examples of employing this capability which contributes to a fully networked force, sharing knowledge, plans, decisions, and acting collaboratively to accomplish many tasks simultaneously.

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<sup>74</sup> Col Kelly Mayes, “JFCOM ‘Little C’ Update” (Brief to JI&E Enterprise Conference, 9-12 January, 2007), [presentation on-line]; available from <http://jfc.com.mil>; Internet; accessed 18 February 2008.

<sup>75</sup> U.S. Joint Forces Command, “A Concept for Rapid Decisive Operations by J9 Joint Futures Lab RDO Whitepaper version 2.0,” <http://www.globalsecurity.org/military/library/report/2001/RDO.doc>; Internet; accessed 14 February 2008.

The military element of DIME has also witnessed transformation at the strategic level of conflict. In recent years the Government of Canada has adopted a “Canada First Strategy” for Defence with the intent to reinforce the “Canadian Forces independent capacity to defend Canada’s security and sovereignty at home and abroad.”<sup>77</sup> The implications of this strategy include an enhanced capacity to fulfill traditional protection of Canada and North America roles in cooperation with the U.S.A. but also defending Canadian interests abroad. The government also wanted Canada to contribute to United Nations and NATO responsibilities, perhaps simultaneously and in different regions of the world. Flowing out from this strategy is the Defence mission to “defend Canada and Canadian interests and values while contributing to international peace and security.”<sup>78</sup> The Canadian Forces, in turn, support the mission statement and are responsible for the objectives; protecting Canada, defending North America in cooperation with United States, and contributing to international peace and security.<sup>79</sup> The Department of National Defence recognizes it is essential to work with many Canadian and international partners that assist in executing its mission. Defence partnerships and relationships help support the whole of government approach to operations (DIME) as well as ensure parallel coordination and cooperation in domestic security or public safety issues. Often the distinction between domestic and international issues becomes blurred but a concentrated focus and innovative partnerships are necessary for the success of the Defence mission.<sup>80</sup> As you would expect, aerospace power, and in particular air mobility, play a critical role in achieving the defence objectives.

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<sup>77</sup> Treasury Board of Canada Secretariat, “DPR 2005-2006 National Defence – Minister’s Message,” [http://www.tbs-sct.gc.ca/dpr-rmr/0506/ND-DN/nd-dn01\\_e.asp](http://www.tbs-sct.gc.ca/dpr-rmr/0506/ND-DN/nd-dn01_e.asp); Internet; accessed 19 February 2008.

<sup>78</sup> Treasury Board of Canada Secretariat, “DPR 2005-2006 National Defence – Minister’s Message,” ..., 2.

<sup>79</sup> *Ibid.*, 2-3.

<sup>80</sup> *Ibid.*, 3.

There have been several Department of National Defence policy documents that emphasized the need for Canada to develop its capacity in airlift. The most significant is the latest Defence policy statement which indicated the Canadian Forces will “acquire, or ensure access to, the right mix of capabilities to meet the increasing requirements for domestic, global [strategic] and in-theatre [tactical] airlift.”<sup>81</sup> Indeed, this commitment to enhanced aerospace capability is a result of the security challenges and for the Canadian Forces to achieve the government objectives they must be effective, relevant, and responsive. Furthermore, air mobility must be capable of delivering this ability and supporting the other elements of the Canadian Forces to achieve this ability whether at home or abroad.<sup>82</sup>

Presently, the Government of Canada is discussing another relevant aspect of the military element in national power. The Manley commission on the Afghanistan mission has recommended the Canadian Forces, “. . . continue with combat role with a greater emphasis on training the Afghanistan National Army.”<sup>83</sup> The Commission noted the requirement for specific aerospace capability and identified a sub-set of this recommendation, “To better ensure the safety and effectiveness of the Canadian contingent, the Government should also secure medium helicopter lift capacity and high-performance Unmanned Aerial Vehicles (UAVs) for intelligence, surveillance, and reconnaissance before February 2009.”<sup>84</sup> Based on the report, Canada may be directed by the government to alter the campaign design for Task Force Afghanistan towards a more holistic approach. The aforementioned is the only inference of aerospace power in the report and it absolutely links the requirement for air mobile capability to the military element of national power.

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<sup>81</sup>Department of National Defence, *Canada's International Policy Statement: A Role of Pride and Influence in the World- Defence* (Ottawa: Her Majesty the Queen in Right of Canada, 2005), 14.

<sup>82</sup> DND, *Canada's International Policy Statement: A Role of Pride and Influence in the World- Defence...*, 32.

<sup>83</sup> *Report of Independent Panel on Canada's Role in Afghanistan*, The Honourable John Manley, Chair..., 37.

Economic considerations are prevalent in strategic level planning. In modern conflict, it is an essential ingredient to be successful in the new security and defence environment because the end-states of operational plans require a “durable and lasting peace in joint, multinational, and multi-agency efforts which involve numerous state and non-state actors.”<sup>85</sup> These efforts are becoming extremely complex and involve various agencies, such as DFAIT and the Canadian International and Development Agency (CIDA) working harmoniously to, not only address the post-conflict state, but create the conditions for a successful end-state to the operational plan. Whatever holistic methodology is considered, it will undoubtedly incorporate economics as a line of operations in the effects-based approach.

In fact, Canada’s International Policy Statement establishes a whole of government approach including development and commerce describing “security and development [as] inextricably linked.”<sup>86</sup> The Canadian government, in concert with many others, considers development a critical first line of defence for a system of collective security because it prevents poverty. Not only will this save millions of lives but it strengthens global security by improving an impoverished state’s ability to combat terrorism, crime, and proliferation of weapons. Air mobility can influence this line of operation and regularly practices interoperability with DFAIT and CIDA through direct support to humanitarian assistance. Moreover, Canada acknowledges its interests are better served by preventing humanitarian crisis rather than waiting to respond with assistance after a crisis erupts. Canada’s Air Force is frequently called on to transport personnel on economic trade missions to support strategic goals related to economic development.

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<sup>84</sup> *Ibid.*, 38.

<sup>85</sup> Allan English, John McKay and Howard Coombs, *Influence Operations: Historical and Contemporary Dimensions*, Contract Report for DRDC Toronto (Toronto: DRDC, 2007), 113.

The U.S. has been critiqued in its role in the economic line of the holistic methodology for complex contingency operations. There are an increasing number of territorial disputes, armed ethnic conflicts, and civil wars that pose threats to international peace and security but often they are accompanied by disasters that create extensive human suffering. The many complex contingency operations that the U.S. have been involved in require a blend of military demands and economic intervention if there is any hope of stopping the violence, restoring stability and ultimately promoting recovery of a country in turmoil.<sup>87</sup> The committee addressed one of the chief weaknesses as the U.S. capacity, in civil-military cooperation, to restore order in a humanitarian emergency.

Once more, the report on Canada's role in Afghanistan deduces that transformation is required in line with the elements of national power. The report's third recommendation suggests that Canada's involvement in the re

and economic, resources and environment, and science and technology. Of course the operations that Canada is involved in today may not have been predicted a few short years ago.

Nevertheless, rather than avoiding the possibility of providing wrong direction, the Canadian Forces must study trends in FSE to avoid surprise and being unprepared for potential situations.<sup>89</sup> The Chief of Air Staff echoed this sentiment noting operational planners must position the Canadian Forces to prepare for the next “unpredictable event.”<sup>90</sup>

The purpose of analyzing these trends is to explore how key global issues could impact Canada over the next several years and how the Canadian Forces may be called upon to employ its capability, particularly air mobility power. An onward looking, anticipatory vision of the changing security environment will permit the air force to shape its capabilities so that it is prepared to deal with emerging challenges to Canada’s security interests at home or abroad.

Political power is the imposition of one country’s will on another and there are many political trends that are predicted to shape which countries may obtain this power and how they may employ it.<sup>91</sup> Globalization is one such development that has seen barriers removed in trade, travel, transportation, and communication. By reaction, there has been an increase in trans-national flow of goods, services, capital, labour and ideologies. This permits greater access to

It is likely that the influence of Non-Governmental Organizations (NGO) will steadily increase. NGOs are continually employed in areas of tension and conflict and have forced governments to follow a more comprehensive approach with more integrated coordination. Compounded by globalization, now NGOs are complementing the work of military forces under the scrutiny of the public's humanitarian and government interests. NGOs, while normally reluctant to join a coalition effort, require a secure environment and are generally quick to utilize air mobility capability of a military before associating with a capable combat force.<sup>93</sup>

The balance of power has never been as lopsided as it is now with the U.S. The Americans recognize there are regional super-national organizations that can pool their sovereignty to achieve greater collective power through a concerted DIME approach, thereby constraining America's ability to act or react.<sup>94</sup> It is estimated that the U.S. will strive to maintain this dominant position by investing in economic and military growth while leveraging strategic alliances. There is a genuine concern that the rapid growth in American technology and military doctrine will leave its allies lagging behind and widen the gap of interoperability. Canadian air mobility forces have normally been quite adept in operating with U.S. air and joint forces.<sup>95</sup>

Due to the nature and complexity of threats to international security, there is a tendency for multilateral cooperation which means Canada will likely continue to contribute to international organizations such as United Nations (UN) and North Atlantic Treaty Organization (NATO.)<sup>96</sup> It is also anticipated the U.S.A. will continue to seek alliance or coalition

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<sup>92</sup> *Ibid.*, 3.

<sup>93</sup> *Ibid.*, 4.

<sup>94</sup> United States Joint Forces Command, *Joint Operating Environment: Trends and Challenges for the Future Joint Force Through 2030* (Norfolk: USJFCOM, 2007), 18.

<sup>95</sup> William B. Scott, "Tactics Training Gives 'Heavies' Fighting Chance," *Aviation Week & Space Technology* 158, no.1 (January 2003): 46.

<sup>96</sup> Department of National Defence, *The Future Security Environment 2007-2030 – Part One...*,5.

partnerships, although United States Joint Forces Command (USJFCOM) caution against the composition of such a cooperative if it involves too many minor, competing, self-interested agencies attempting to control or focus U.S.A. actions.<sup>97</sup> The UN will be challenged to be more than just a means of justification and therefore will need to improve its organization and international record in order to avoid unilateral actors and like-minded coalitions from proceeding on their own initiative. NATO, conversely, has continually adapted to the evolving security environment and by 2030, it will likely have an entirely different appearance. In particular, NATO will expand from its collective defence role to deployed capabilities such as stabilization and counter-terrorism operations. However, NATO may expand its membership to the point where it will become impossible to reach a consensus and thereby reduce the organization's operational effectiveness. Canada may wish to better align with the Association of Southeast Asian Nations (ASEAN) whose aim is to "ensure that countries in the region live at peace with one another and with the world in a just, democratic, and harmonious environment."<sup>98</sup> The ASEAN organization has a committee devoted to the Economic Community and could potentially be a strategic partner with Canada to prevent the spread of conflict throughout the developing world especially since it shares the same moral principles; improving the day to day lives of the people and prevent conflict occurring as a result of "discontentment and disenchantment."<sup>99</sup> No matter what the international organization, air mobility is currently very engaged and will raise the level of involvement if Canada joins additional organizations in Asia.

Failed and fragile states are also of grave concern in the political aspect of the future security environment. Governments of such states lack the capacity or inclination to defend their

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<sup>97</sup> USJFCOM, *Joint Operating Environment: Trends and Challenges for the Future...*, 22.

<sup>98</sup> Department of National Defence, *The Future Security Environment 2007-2030 – Part One...*,7.

sovereignty and provide national security. The fragile condition often begins as a result of economic breakdown, resource competition, unmanaged ideologies, or an unsuccessful social infrastructure which results in the people not having confidence in their government.<sup>100</sup> The danger is that this instability will spread to neighbouring countries but also it can cause a humanitarian crisis, a flow of refugees, civilian casualties, and civil wars which necessitate international intervention. If intervention is necessary once a state has collapsed, the coalition would use a comprehensive approach to achieve an end-state that leads to a restored ability for the state to function effectively, care for its citizens, and become a peaceful member of the international community. This action will also assist in eliminating terrorism from unstable states. However, it would be naïve to think that terrorism will not continue to evolve and adapt with new weapons and methods of attacks. In fact, the trend foresees an emergence of new terrorist organizations with similar tactics but perhaps different goals. The same holds true for criminal activity. It is becoming increasingly impossible to identify “the boundaries between profit-seeking criminal organizations and other politically or ideologically motivated groups.”<sup>101</sup> There are numerous criminal organizations located in North America who continually search for new ways to exploit the legitimate evolving global economy. An example close to home is the expanding diamond industry in Canada’s Arctic attracting the attention of organized crime. This criminal activity is predicted to evolve, adapting to new technologies, developing more sophisticated international networks, and searching for new, uncharted markets. This threat will persist, particularly with political instability. The threat of volatile states, terrorism, and increased organized crime will occupy military forces and an air mobile capability in the future.

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<sup>99</sup> *Ibid.*, 9.

<sup>100</sup> USJFCOM, *Joint Operating Environment: Trends and Challenges for the Future...*, 19.

<sup>101</sup> Department of National Defence, *The Future Security Environment 2007-2030 – Part One...*, 12.

Military operations are now under scrutiny from several components of globalization and hence, the military actions in far-off countries may have significant and unpredictable effects on Canada or countries closer to home. With globalization today, if a state loses the power to effectively govern, it contributes to the rise of non-state actors such as NGOs and multinational corporations and also ethnic militias or terrorist groups. Consequently, theatres of military operations are becoming much more complex and more difficult to predict desired effects of a force. Adversaries are also evolving in their techniques and realize hiding amongst the larger population is much more efficient and effective than well-equipped conventional forces. As a result, the adversary is “less predictable, harder to apprehend, and more likely to practice asymmetric tactics or guerrilla warfare or terrorism, in lieu of risking a conventional, head-on confrontation.”<sup>102</sup> Military forces have had to learn to counter and balance military effects against an adversary’s asymmetric threat by focusing on the development of precision capabilities. The trend foresees a concentration on Special Operations Forces (SOF) and precision weaponry.<sup>103</sup> SOF is becoming highly desirable due to their specialized capabilities to enter a hostile territory in covert operations. This capability provides reconnaissance, precision strikes, sabotage, guerrilla warfare, and tactical search and rescue. Indeed, to deliver the speed, precision and stealth portions of this capability, it most often entails an air mobility capacity.

Four Block Warfare is another future trend in military operations that will effect requirements for air mobility. The concept originated as a three block dimension of a foreign city where the Canadian Forces may be involved in separating warring factions in one block, conducting peace support operations in the second, and distributing humanitarian assistance in a third block. The fourth dimension has introduced psychological or information operations which

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<sup>102</sup>*Ibid.*, 43.

<sup>103</sup>*Ibid.*, 43.

infer that the coalition's campaign actions can broadcast a counter-insurgency message even in blocks where the forces are not located.<sup>104</sup>

There is a global concern that Weapons of Mass Effect (WME) will find their way into the hands of extremists and eventually be used against civilian populations. This capability offers radical groups tremendous power and their connection to other non-state actors presents potential for abuse. The effect is also achieved through chemical and biological weapons that require far less technology to produce and are, consequently, more attractive to these groups. It is often the developing countries that attempt to acquire WME because they see this prestigious power as a fixation normally held by Western society. Certainly underdeveloped countries in possession of advanced missiles or submarines portray a threat that will decelerate a coalition's military plan of intervention. It is predicted that irregular forces will have greater access to sophisticated weapons and technology thereby getting closer, and in fact reducing, the technical advantage of Western militaries.<sup>105</sup>

Plurality of Armed Forces in failed or failing states will also add to the complexity in the future security environment. Due to the fact that many of these states employ armed civilians in security or military roles instead of a professional military force, it propagates armed groups in an uncontrolled environment. The concern is that the Canadian Forces will be required to work with and against an array of groups carrying arms. The air mobility community is often first into such a state and distinguishing between combatants and non-combatants, as well as understanding the relationships of the actors, will be extremely difficult.

In addition, Social and Economic trends will have a consequence on air mobility at the operational planning level. There is a global recognition of inequalities among states where

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<sup>104</sup> *Ibid.*, 45.

<sup>105</sup> *Ibid.*, 47.

some are desperately trying to keep pace economically, yet others have an added burden of a standard of living that is dramatically falling while the population is growing.<sup>106</sup> Social instability is an important factor that demonstrates the fragility of a state. If there is enough discord within a state coupled with economic or other negative social factors, a state will likely result in failure. A socially diverse state, even in a poor status, could exist if it had a stable economy. Conversely a wealthy state that is experiencing an economic decline may be subjected to social friction and collapse. It is this sort of tension and conflict within and amid states that can threaten the international security environment.

Migration is a social trend that will likely rapidly increase into the next decade. In the developed world there is a movement to recruit skilled labour to replace the aging population of the workforce. While the developed world's population is not increasing through birthrate, it is certainly growing as a result of migration which is predicted to impact Canada through illegal entry to the country, as well as the new citizens changing the social, political, and economic foundations of the culture they join. The concern is that some states will endure emigration problems like decreased productivity, while others will have increased immigration leading to economic unease with a flood of non- and semi-skilled workers on the domestic labour markets. Statistics Canada predicts by 2011, all labour growth in Canada will be attributable to immigration, and by 2017 one out of every five people in Canada will belong to a visible minority; half of which will be from the Chinese or South Asian groups.<sup>107</sup>

It is likely, then, that Diaspora communities will continue to grow in Canada yet they remain conversant and connected to the internal issues of their homelands. Often this results in tension within a host country as rival states accuse one another of supporting "fifth

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<sup>106</sup> *Ibid*, 16.

<sup>107</sup> *Ibid.*, 17.

columnists.”<sup>108</sup> Even though, Canada could use this tension effectively to garner a better understanding and connection to important areas of the world. Ethnic groups with a large populous in a democratic society and strong family connections to their homeland can often influence their new country’s foreign policy. The trend will see Western militaries supporting humanitarian assistance efforts around the world. As well, they will be developing their military deployments around the protection of their citizens who have migrated to take advantage of economic opportunities in other developed portions of the world.<sup>109</sup>

The UN is predicting that nearly sixty percent of the global population will be centered in large urban areas by 2030. While developed states should be able to accommodate the strain this will have on government institutions, it is forecasted that failed and failing states will suffer “[decreased] economic opportunity, inadequate infrastructure, exposure to disease, and criminal predation.”<sup>110</sup> Canada is aware that this will cause the populous to seek alternatives at opposite extremes such as join a terrorist or criminal group or migrate to more stable countries. In Canada, too, there is a trend to migrate to large urban centers which will continue to increase demands on social services in these areas. These trends are compounded by natural disasters or acts of war which trigger mass movements of people towards urban centers, often across borders. The fear of the international community is of uprooted and displaced persons destabilizing a political and social infrastructure of a country which leads to spread of conflict. The strain on infrastructure and living in dense and unsanitary conditions induces infectious diseases and, again, will require international intervention in the form of humanitarian assistance. Infectious disease is of grave concern to the international community due to globalization and the opportunity for disease to spread rapidly throughout the world.

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<sup>108</sup> *Ibid.*, 18.

<sup>109</sup> *Ibid.*, 18.

The World Bank predicts global economic output in 2030 to be \$72 trillion USD compared to \$35 trillion USD in 2005.<sup>111</sup> This economic growth will occur while significantly enlarging regional disparity and, much like the population growth, it will be concentrated in the developed countries leaving the under-developed countries in desperate humanitarian conditions. Moreover, the uneven growth in the developed countries will lead expanding wealthy countries to aggressively achieve goals while a more powerful country faced with a dwindling economic situation may react to fear of being overtaken which may result in conflict and war. It is predicted that Canada will continue to expand as a trading nation, but the U.S. will remain the primary trading partner. Preserving the cross-border free trade of goods and services will be critically important to both countries but Canada will, nevertheless, move forward with trade to other developing nations. The increased movement of people, goods and services internationally will benefit Canada economically but will also have important security repercussions due to threat of terrorism or disease.<sup>112</sup>

Resources and environmental trends will also shape military operational focus in the future. Historically, countries competing for resources have resolved the dispute in armed conflict. Canada will be envied because of its large resource stocks and competition for limited resources on the international stage will steadily increase, leading to tension and conflict. Water and food will remain a most critical resource and its scarce availability to countless millions around the globe will find states unable to provide for their citizens.<sup>113</sup> Desertification and drought, noted especially in Saharan Africa, has caused displacement of people, stress between

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<sup>110</sup> *Ibid.*, 19.

<sup>111</sup> The International Bank for Reconstruction and Development / The World Bank, *Global Environmental Prospects 2007*, (Washington: The World Bank, 2007), [Article on-line]; available from <http://www.worldbank.org/gep2007>; Internet; accessed 1 March 2008; xiii.

<sup>112</sup> Department of National Defence, *The Future Security Environment 2007-2030 – Part One...*, 25.

<sup>113</sup> United Nations, "Desertification," Food and Agriculture Organization, [Article on-line]; available from <http://www.fao.org/desertification/default.asp?lang=en>; Internet; accessed 1 March 2008.

state and citizens, an overburdened aid program and farmers fleeing productive lands due to severe violence.<sup>114</sup> A shortage of potable water will have the same effect and even more so where countries share a common water source. For Canada, the concern will be protecting its own resources first, and then stabilizing regions where tensions over water could lead to violent resolution.

Current trends show rising energy consumption and as the scarcity of supply in this stock increases, so too will the potential for conflict involving oil. This will be particularly evident where the gap grows larger between the advantages of more developed economies to access oil compared to less developed countries. There is a tendency to suppose nuclear power would alleviate the international unease over oil, but it often has the opposite effect. The proliferation of nuclear reactors may spark heightened tensions with neighbouring states that are apprehensive or feel misfortune not having the same technology.<sup>115</sup>

Minerals and metals, particularly uranium, will pose future security concerns for Canada. There will be an increased demand and rising price for uranium, but Canada, as the world's leading producer,<sup>116</sup> will encounter opposition from "environmentalist and eco-terrorists determined to prevent increased uranium exploitation [which] will be a source of tension . . . could also develop into security threats."<sup>117</sup> Tungsten is a strategic metal that is currently controlled by China, and world-wide producers of such strategic metals as coltan and cassiterite, (which are also vital for advancing military technology) will be subjected to boycotts, placing belligerents in desperate need of these resources and it will ultimately lead to conflict.<sup>118</sup>

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<sup>114</sup> United Nations, "Desertification," Food and Agriculture Organization, [Article on-line].

<sup>115</sup> Department of National Defence, *The Future Security Environment 2007-2030 – Part One...*, 31.

<sup>116</sup> World Nuclear Association, "Uranium Production Figures, 1998-2006," [Table on-line]; available from <http://www.world-nuclear.org/info/inf102.html>; Internet; accessed 1 March 2008.

<sup>117</sup> Department of National Defence, *The Future Security Environment 2007-2030 – Part One...*, 31-32.

<sup>118</sup> *Ibid.*, 32.

Climate change is also driven by economic and demographic growth. It is calculated that even if the international community acts aggressively by reducing greenhouse gas production now, there is so much carbon dioxide presently in the atmosphere that the effects of global warming will be felt well beyond 2030.<sup>119</sup> The effects will have consequences for Canada and the world community including melting polar ice cap, rising sea levels, desertification leading to decline of crop yields, extinction of some species, spread of tropical diseases and an increase in environmental disasters like floods, earthquakes and droughts. While Canada could potentially reap some benefits from global warming with longer growing seasons, etcetera, it will likely call for global humanitarian assistance for most areas, which will certainly impact air mobility operations. Another serious security concern for Canada is the fact of global warming in the Arctic region. It is anticipated Canada's north will see increased transit of air, surface, and sub-surface vessels due to the depletion of global resources and advanced exploitation technologies ready for northern development. The Canadian Forces will be called upon to protect "the peoples, resources, and ecosystem of its [Canada's] northern residents."<sup>120</sup>

Developments in science and technology will continue to influence Canada's future defence and security objectives. There are many allegedly positive trends and advances in technology that will support future defence and security capabilities but on the other hand, there is more potential for perverse applications of technology by unethical actors. Nanotechnology will significantly progress defence in a wide array of capabilities by 2020 and will underpin information and computing technological growth exponentially. Biotechnology will advance to the stage where it may assist the Canadian Forces in protection from disease in theatres of

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<sup>119</sup> United Kingdom Treasury, *Stern Review of the Economics of Climate Change*, [Report on-line]; available from [http://www.hm-treasury.gov.uk/independent\\_reviews/stern\\_review\\_economics\\_climate\\_change/stern\\_review\\_reports.cfm](http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_reports.cfm); Internet; accessed 2 March 2008, i -xxviii.

operation but it does present a security threat due to its potential use by belligerents in weapons of mass destruction and deliberate pandemic outbreaks.<sup>121</sup>

Cognitive, behavioural and social sciences, described next, will also represent some considerable steps forward in defence and security capabilities.<sup>122</sup> For example, *unintended consequences* refer to the rapid acceleration of technological advancement which increases the chance of unpleasant effects. This could result in fear of error, therefore deceleration in technological research and development where it could prove beneficial. Societies may also develop a *dependence on technology* and consequently, become more susceptible to deliberate or unintentional disruptions. *Narrowing of technological advantage and technological leakage* describes the narrowing gap between unstable or developing economies compared to industrial technological nations. This will result in industrial espionage and organized crime and it will become increasingly difficult for militaries to authenticate electronic information. Ultimately, adversaries will have better access to science and technology leading to a proliferation of chemical, biological, radiological, and nuclear advanced weapons systems. *Erosion of civil liberties* will occur as privacy rights, exploitation of human rights and ethical standards are threatened due to increased surveillance to guard against terrorism. Finally, *rapid obsolescence* will continue and the explosion of technological advances will render the cycle between their obsolesces shorter each time. Defence planners will be challenged with this dilemma as they ponder future procurements and as less advanced nations simply pounce on latest technology without going through a modernization period or process.

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<sup>120</sup> Department of National Defence, *The Future Security Environment 2007-2030 – Part One...*, 34.

<sup>121</sup> *Ibid.*, 40.

<sup>122</sup> DCDC, “Global Strategic Trends Programme 2007 – 2036,” [Document on-line]; available from <http://www.dcdc-strategictrends.org.uk/viewdoc.aspx?doc=1>; Internet; accessed 2 March 2008, 61-62.

These science and technology trends will undoubtedly place demands on the Canadian Forces and air mobility. There is always a “risk of falling behind allies’ capabilities and losing interoperability . . . costs and capabilities will have to be balanced.”<sup>123</sup>

## **Tactical Level**

The tactical level of conflict refers to the level where battles or engagements are planned and executed to accomplish military objectives. The focus of this activity is on the ordered arrangement and manoeuvre of combat elements in relation to each other and the enemy, to achieve the combat objectives established by the operational level commander.<sup>124</sup> At the tactical level, requirement for air mobility will be evaluated using the CSASS (Command, Sense, Act, Shield, and Sustain) planning factors for the employment of this capability on specific tasks. These are the functional capabilities through which fighting power is applied and in so doing, forces conduct activities known as core functions: find, fix, strike, and also exploit as an implied function.<sup>125</sup> Together, these two functional groupings form the functional framework for manoeuvre which includes physical (fires) and influence activities.

Command is the operational function that incorporates all other operational functions into a single comprehensive tactical level concept.<sup>126</sup> It provides vertical and horizontal integration through the planning, direction, coordination, and control of military forces and other elements as allocated. It also provides the system to fuse and incorporate the activities of other functions directed at finding, fixing and striking an enemy or other targets. The fundamental factor of the Command function is a belief accentuating the importance of formulating and communicating

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<sup>123</sup> Department of National Defence, *The Future Security Environment 2007-2030 – Part One...*, 43.

<sup>124</sup> Department of National Defence, B-GJ-005-300/FP-000 *Canadian Forces Operations...*, 1-5.

<sup>125</sup> Department of National Defence, B-GL-300-001/FP-000 *Canadian Forces Land Operations* (Ottawa: DND Canada, DRAFT 2007), 51.

the commander's intent. A comprehensive understanding of the intent channels decision-making at all levels, and encourages initiative and speed of action. This also promotes a united purpose and effort on the vertical and horizontal planes and even between the military and other agencies within the joint, inter-agency, multinational, and public (JIMP) framework.

The Bi-national Planning Group established to address future defence relationships for enhanced military cooperation between Canada and the United States (CANUS) explains, "Command synchronizes all other operational functions to prosecute operations at a very high tempo, across the entire area of operations and multiple domains."<sup>127</sup> Within defensive operations, military commanders have this legal authority; however, when supporting civil operations or consequence management missions, the military commander is usually providing a general support role to a civil agency or department. Within CANUS, the Command function generates the greatest level of interoperability, which is a trait prevalent in Air Mobility operations involving the two countries.

Sense is the operational function that gives the commander knowledge by integrating assets that collect information and then provides the analysis to produce, and finally, disseminate the information and knowledge.<sup>128</sup> It is designed to influence all sources of information by means of centralizing sensor management and synthesis to maximize incongruent systems in the battle space. The extent of the sense function must be extensive enough to not only provide the commander with a broad and deep knowledge base of the operational environment, but also to evaluate the effects of activities across all elements within the environment. This view of the

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<sup>126</sup> Department of National Defence, B-GL-300-001/FP-000 *Canadian Forces Land Operations...*, 52.

<sup>127</sup> Bi-National Planning Group, *Interim Report on Canada and the United States (CANUS) Enhanced Military Cooperation, October 13, 2004*; [Report on-line]; available from [http://www.forces.gc.ca/admmat/dgmpd/mhlh/docs/mhlh\\_sor\\_v1\\_annex\\_b\\_13\\_June\\_06.pdf](http://www.forces.gc.ca/admmat/dgmpd/mhlh/docs/mhlh_sor_v1_annex_b_13_June_06.pdf); Internet; accessed 28 February 2008.

<sup>128</sup> Department of National Defence, B-GL-300-001/FP-000 *Canadian Forces Land Operations...*, 52.

environment must firstly include the physical characteristics of weather and terrain, and also the broad range of other systems, entities, and power structures that exist and operate in the environment. The interrelated elements and systems of an environment that must be assessed in the broad knowledge base are the political, military, economic, social, infrastructure, and information (PSEMII model.) These elements must be assessed by the Sense capabilities, but in addition, the effects of the activities upon them must be predicted as well as possible and then evaluated to make certain that the desired effects and objectives are being accomplished.

The Sense function provides the “situational awareness, discovered by any means, of a person, object, or phenomenon of potential military significance . . . provides the most thorough knowledge possible, rather than simple data and information.”<sup>129</sup> Integrated sensor and sensor analysis into a single concept allows for a fusion and analysis of comprehensive sensor data within a single system thereby providing commanders with timely and relevant knowledge. The Chief of Land Staff recognized this importance and suggested the army needs to improve the Sense capability giving the highest equipment acquisition priority to Intelligence, Surveillance, Target acquisition, and Reconnaissance (ISTAR) systems.<sup>130</sup> Air mobility can certainly assist other elements in achieving this operational function at the tactical level.

The Act function integrates manoeuvre, firepower (fire activities), and information (influence activities) to achieve effects. By synchronizing manoeuvre, firepower (the fires) and influence, it permits the decisive concentration of effects against targets and centers of gravity which, if fractured, will dislocate the adversary, breaking cohesion and the will to resist. The Act function engages a wide range of targets, including information operations such as civil-military cooperation reconstruction (CIMIC) or psychology operations (PSYOPS.) Therefore,

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<sup>129</sup> Bi-National Planning Group, *Interim Report on (CANUS) Enhanced Military Cooperation...*, 13.

functions inherent in Act are conducted on the physical and psychological planes in order to achieve the desired effects and end-state, using lethal and non-lethal means. It includes the whole amalgamation of “fires and influence activities synchronized and harmonized through manoeuvre and battlespace management.”<sup>131</sup>

Within the CANUS Bi-national Planning Group, Act involves the relationship between manoeuvre, firepower, and information as interdependent systems to defend or defeat a threat.<sup>132</sup> In the civil support context, however, Act is performing the primary mission at a specific time such as fighting forest fires or saving lives. From the North American perspective, Act is considered a function that employs joint and combined forces to create synergy between different capabilities and systems. In this regard, air mobility provides a significant contribution to the Canadian Forces’ tactical capability.

Shield refers to protecting a force’s survivability and facilitating friendly forces’ freedom of action.<sup>133</sup> At the tactical level, it includes protective measures through air defence, counter mobility, and survivability, such as the construction and hardening of defensive positions or structures. Shielding will become increasingly difficult as forces operate in a more dynamic environment and are dispersed over an extended area. Moreover, they will operate against an adversary who is expanding the ability to see and strike, or against a threat that utilizes asymmetric tactics and takes refuge amongst civilian populations.

The function of Shield also includes the force protection measures that are the responsibility of all forces and their specific commanders. For example, CANUS requires an effective Shield function, which in turn deters or prevents enemy action, thereby providing

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<sup>130</sup> LGen Jeffery, “CLS Presentation to Conference of Defence Associations,” [Speaking notes on-line]; available from [http://www.forces.gc.ca/site/newsroom/news\\_e.asp?cat=4](http://www.forces.gc.ca/site/newsroom/news_e.asp?cat=4); Internet; accessed 8 March 2008.

<sup>131</sup> Department of National Defence, B-GL-300-001/FP-000 *Canadian Forces Land Operations...*, 53.

<sup>132</sup> Bi-National Planning Group, *Interim Report on (CANUS) Enhanced Military Cooperation...*, 13.

CANUS commanders survivability and freedom of action. Prevention incorporates practices to discourage attack and deterrence is convincing a potential aggressor that the cost of armed conflict or coercion would be worse than the potential gain.<sup>134</sup> Air mobility demonstrates a show of force in this respect, but also a capability to project a force thus contributing to the Shield function at the tactical level.

Sustain is the operational function that integrates strategic, operational and tactical levels of support to generate and maintain force capability.<sup>135</sup> Sustain normally takes an anticipatory approach that enables support services to be provided commensurate with an increased tempo in manoeuvre operations. Therefore, at the tactical level, sustainment will adopt an intelligence push system based upon situational awareness and asset visibility. The habitual supply-based support system, centered on stockpiling within echelons, often evolves in campaigns to a distribution-based system where supplies are held within a pipeline and continually delivered on an as required basis.

Sustain function in the CANUS discussion consists of all activities in this capacity incorporating transportation, which particularly comprises air mobility.<sup>136</sup> The Sustain function is significant in that it integrates the provision of material and personnel support to ensure the sustainment of combat power, including air mobility. Again, the Chief of Land Staff drew particular attention to the Sustain function as a vital part of the Canadian Forces' capability but suggested it requires an improvement in the aged, incapable equipment used in the supply chain.<sup>137</sup>

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<sup>133</sup> Department of National Defence, B-GL-300-001/FP-000 *Canadian Forces Land Operations*..., 53.

<sup>134</sup> Bi-National Planning Group, *Interim Report on (CANUS) Enhanced Military Cooperation*..., 13.

<sup>135</sup> Department of National Defence, B-GL-300-001/FP-000 *Canadian Forces Land Operations*..., 53.

<sup>136</sup> Bi-National Planning Group, *Interim Report on (CANUS) Enhanced Military Cooperation*..., 13.

<sup>137</sup> LGen Jeffery, "CLS Presentation to Conference of Defence Associations,"...4.

## CHAPTER FOUR - ANALYSIS / DEDUCTIONS

### Criterion for Analysis

The preceding examination of strategic, operational and tactical models discussed possible circumstances where the Canadian Forces may have requirements for air mobility. This information can now be positioned against the current expectations of the Government of Canada and it shall be reconciled against the capabilities directed by the Canadian Force's leadership. It is crucial to examine future requirements for the Canadian Forces in respect to the capability desired. One of the first indications of innovative, post Cold War military force planning was the Strategic Capability Investment Plan (SCIP), published first in 2003.<sup>138</sup> Now, SCIP has developed into a document that forecasts and integrates future Canadian Forces needs, predominantly in capital acquisitions, aimed at satisfying the Forces' goal of capability based planning. Capability based planning is a planning process that is based on identifying likely missions that the Canadian Forces may be called upon to carry out in an actual world scenario, and then position the Forces with the capability to undertake those missions.<sup>139</sup>

This process is also clearly enunciated in the Chief of Defence Staff's transformation initiatives where capabilities are included as one of his four strategic lines of operation.<sup>140</sup> As part of this transformation, the Chief of Force Development (CFD) Officer position was established to "synchronize and harmonize the efforts of the different CF force development communities [and] create a coherent prioritization process for the CF capability acquisitions and

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<sup>138</sup> Elinor Sloan, *The Strategic Capability Investment Plan: Origins, Evolution and Future Prospects*, Report prepared for the Canadian Defence & Foreign Affairs Institute (Calgary: Canadian Defence & Foreign Affairs Institute, 2006), 3.

<sup>139</sup> Sloan, *The Strategic Capability Investment Plan: Origins, Evolution and Future Prospects...*, 3.

<sup>140</sup> National Defence and the Canadian Forces, "CF Transformation and the Chief Force Development," *The Maple Leaf* v.9, no.24 (June 2006); [http://www.dnd.ca/site/community/MapleLeaf/article\\_e.asp?id=2886](http://www.dnd.ca/site/community/MapleLeaf/article_e.asp?id=2886); Internet; accessed 17 January 2008.

sustainment . . . [for a] more holistic and efficient force development process.”<sup>141</sup> The Air Force draft strategy, therefore, has also adopted the capability development framework which comprises the “Conceive-Design-Build-Manage”<sup>142</sup> structure. Once a capability gap is noted in the force development process, the conceive stage generates future aerospace notions that are converted into capability requirements. The design phase determines how the capability requirement would be used, as well as the structures required and repercussions of implementing this capability. Next, once a capability design is approved, it enters the build stage to be fully integrated into the operational Air Force, and finally the capability is managed in its assignment for Force Employment.<sup>143</sup> It is important to note this process is spherical and therefore requires the detailed analysis of future trends to properly forecast, and subsequently organize, air mobility capability to support potential Canadian Forces’ obligations.

What, then, does the Canadian Forces require in terms of future capability? CFD MGen Ward describes his reluctance to establish a handbook on force development and capability based planning process because there are numerous force development activities in the Canadian Forces that must proceed and be integrated at the strategic level. However, it continues to be an enormous challenge and difficult to capture in a written document.<sup>144</sup> Nonetheless, the handbook does describe the process in detail and states that the required capabilities come from the government through the defence strategy. The Canada First Defence Strategy is described in Table 1.<sup>145</sup> It is understandable that the process is tedious and time-consuming, relying on

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<sup>141</sup> DND and the CF, “CF Transformation and the Chief Force Development,” *The Maple Leaf* v.9, no.24..., 1.

<sup>142</sup> Department of National Defence, *Air Force Strategy: The flight plan for Canadian Forces’ aerospace power*, Working Draft V1.7 (26 January 2007), 27.

<sup>143</sup> DND, *Air Force Strategy: The flight plan for Canadian Forces’ aerospace power...*, 27-29.

<sup>144</sup> Department of National Defence Chief of Force Development, *Force Development and Capability Based Planning*, CFD Handbook File # 2900-1 (DGFDA) Draft version 5.0 (2007): ii.

<sup>145</sup> LGen W.J. Natynczyk, “Joint Command and Staff Programme,” (lecture, Canadian Forces College, Toronto, ON, January 10, 2008), with permission: slide 12.

government direction, a series of sections within the Department of National Defence for analysis and development and finally, back to government for approval. It would also

**Table 1 – Canada First Defence Strategy**

<ul style="list-style-type: none"> <li>• <b>An integrated, Canada first approach, will possess the capability to:</b> <ul style="list-style-type: none"> <li>– Develop and maintain situational awareness of all Canadian areas of jurisdiction and deployed operations worldwide</li> <li>– Provide strong leadership and effective command and control to deliver a joint, interagency and multinational approach</li> <li>– Project and sustain integrated sea, land, air and special operations forces</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Three Ocean Navy will possess the capability to:</b> <ul style="list-style-type: none"> <li>– Patrol and assert sovereignty, as well as defend Canadian waters and maritime approaches, including the Arctic</li> <li>– Influence events internationally and be prepared to project and sustain decisive naval power at sea and ashore</li> <li>– Command Canadian and coalition naval forces</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Robust Army will possess the capability to:</b> <ul style="list-style-type: none"> <li>– Respond decisively to crises and contingencies – domestically, including the Arctic, and internationally</li> <li>– Conduct and sustain complex combat and peace support operations anywhere in the world</li> <li>– Command Canadian and coalition forces</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Revitalized Air Force will possess the capability to:</b> <ul style="list-style-type: none"> <li>– Conduct effective air control of Canadian and North American aerospace in cooperation with the US</li> <li>– Conduct surveillance, search and rescue within Canadian territory, maritime approaches, including the Arctic, and internationally</li> <li>– Project and sustain air power in support of deployed operations domestically, including the Arctic, and internationally</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Responsive Special Operations forces will possess the capability to:</b> <ul style="list-style-type: none"> <li>– Counter unconventional and terrorist threats to Canada</li> <li>– Conduct and sustain complex special forces operations that effect the national interest and security anywhere in the world</li> <li>– Respond to a broad spectrum of special tasks in conjunction with a variety of Canadian and coalition security partners</li> </ul> </li> </ul>

Source: VCDS Brief to CFC JCSP 34, 10 January 2008, slide 12.

explain why the Canadian Forces’ Capability Defence Initiatives (CDIs) are not yet approved and finalized. The required capabilities obviously hold a security classification but initial observations suggest the force planning scenarios can be grouped into the unclassified “Mission

Categories” of Routine Operations, Disaster Relief, Humanitarian, Security, Peace Support, Counter Terror, Counter Insurgency and War.<sup>146</sup> These categories are derived effortlessly from the Canada First Defence Strategy and shall be used as the criterion in this research paper from which to measure the strategic versus tactical capability requirements of air mobility.

Part of the capability based planning process is to establish current capabilities and deficiencies, as well as those forecasted, in order to establish what capabilities will be required to support future Canadian Force’s operations. The Canadian Forces Air Mobility community has forecasted significant deficiencies in the transition / operational capability gap out to year 2014. The strategic capability is in good stead with this capability largely supported by CC-150 Polaris and the newly acquired CC-177 Globemaster. The CC-177 has been declared only as a strategic platform and shall not be used by the Canadian Forces in a tactical role.<sup>147</sup> The deficiencies mainly resonate in the CC-130 Hercules which provides the tactical air transport (TAT) capability to the greatest extent. With the CC-130 due to completely retire in 2014 and the transition of the new Airlift Capability Project – Tactical (ACP-T) as well as Fixed Wing Search and Rescue (FW SAR) aircraft not anticipated until 2010/11, the TAT capability of the Canadian Forces will be severely deficient.<sup>148</sup> Likewise, the TAT capability in rotary wing is deficient in that the Canadian Forces will not have heavy helicopter lift until at least 2012 and the CH146 Griffon has not been declared air worthy to support the Canadian Forces in some of the high risks missions that are assigned to them.<sup>149</sup>

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<sup>146</sup> Cdr John Zorz, “Capability Development Board” (Brief to CFD, Ottawa, ON, December 12, 2007), with permission.

<sup>147</sup> LCol W.J. Lewis, Dean of Doctrine, CFAWC 8 Wing Trenton, conversation with author, 19 February 2008.

<sup>148</sup> LCol W.J. Lewis, “Air Mobility Transition/Operational Capability Gap 2006 – 2014” (brief, prepared for CFAWC, Trenton, ON, December, 2007), with permission.

<sup>149</sup> Kennedy, “When it Comes to Protecting Soldiers’ Lives, Makeshift Measures Beat No Measures...”, 1.

The Canadian Forces aerospace capabilities, “like any finite resource, will always be in greater demand than supply.”<sup>150</sup> This research is an essential examination for future requirements with the purpose of ensuring Canadian Forces have the proper capability to carry out the missions with the necessary equipment and if not, where the force development personnel should focus their efforts to lessen the capability gaps that may exist. The three levels of operation (strategic, operational, and tactical) will be analyzed by assessing whether the mission categories (based on defence capabilities derived from defence strategy) are applicable in either a strategic or tactical air mobility capacity to the models discussed at each level.

### **Air Mobility Strategic Defence Capabilities**

Strategic and tactical air mobility has several applications to the DIME model. Table 2 provides an overview of the mission categories which employ strategic and tactical air mobility within the DIME model as well as the specific areas of deficiency that exists in the Canadian Air Force.

Diplomacy particularly employs the use of strategic air mobility but also contains some tactical applications. The Government of Canada’s commitment to a North American partnership with the U.S. includes shared global objectives and advancing Canadian goals in the Arctic. This will require an increase in interoperability between the two countries and Canada’s Air Mobility group currently practices this attribute, contributing to the mission categories of Routine Operations, Disaster Relief, Humanitarian, Security, Counter Terror and Counter Insurgency.

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<sup>150</sup> DND, *Air Force Strategy: The flight plan for Canadian Forces’ aerospace power...*, 29.

**Table 2 – Air Mobility and the DIME Model**

National Power Elements	Strategic Air Mobility	Tactical Air Mobility
Diplomacy	Routine Ops Disaster Relief Humanitarian Security Peace Support War	Routine Ops Disaster Relief Humanitarian Security Peace Support Counter Terror Counter Insurgency War
Information	Disaster Relief Humanitarian Security	Disaster Relief Humanitarian Security Counter Terror Counter Insurgency
Military	Routine Ops Disaster Relief Humanitarian Security Peace Support Counter Terror Counter Insurgency War	Routine Ops Disaster Relief Humanitarian Security Peace Support Counter Terror Counter Insurgency War
Economics	Disaster Relief Humanitarian	Disaster Relief Humanitarian
<p><b>Summary:</b> The Air Force has the capability to support all mission categories that require strategic air mobility with respect to the DIME model. There are more mission categories associated with tactical air mobility using DIME. However, the capability in TAT is overall in a fragile condition<sup>151</sup> and may not be able to support the mission categories derived from DIME in most cases.</p>		

Strategic air mobility is now stabilized from Canada’s perspective and there will not be as much demand for USAF resources when Canada needs to move strategically on deployment or within North America supporting natural disasters. In fact, Canada now has the capacity to

contribute more in this regard and could certainly provide diplomatic assistance with, or to, the U.S. for occasions such as Hurricane Katrina. Canada's Air Mobility Tactical Air Transport (TAT) crews have also regularly contributed to interoperability between the two countries, mainly during TAT exercises such as "Red Flag" in the U.S.<sup>152</sup> However, while this provides great training value and interoperability experience with USAF and other NATO air forces, it is becoming increasingly difficult for Canada to provide aircraft and crews. In fact, in some years the Canadian Air Force has cancelled its commitment to participate.

Certainly the preservation of Arctic sovereignty will require more tactical than strategic air mobile capability while conducting Routine Operations, or any of the mission categories in support of the North. Growing international interests for a commercial shipping corridor has already begun and the development of a national presence in this region will require the "transshipment of personnel, supplies, equipment, building material, and so on to create the required controls and infrastructure to meet any challenges to Canadian claims of sovereignty."<sup>153</sup> However, discussions in the Arctic Council speak of scientific exploration, energy development and environmental protection above 60 degrees northern latitude and this can only accommodate a tactical air mobile capacity.<sup>154</sup> The Air Force is struggling to maintain the regular sustainment flight to Canadian Forces Station (CFS) Alert and would not be able to accept additional responsibility in the Arctic with its current fleet.

By entering into bi-national planning with the U.S., Canada specifically looks at mission categories such as Counter Terrorism, Disaster Relief, and Security through NORAD in conjunction with its southern neighbour. Similarly, the two countries cooperate in global

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<sup>151</sup> LGen S. Lucas, "Air Mobility – An Essential Capability for Canada," ..., [on-line].

<sup>152</sup> William B. Scott, "Tactics Training Gives 'Heavies' Fighting Chance," *Aviation Week & Space Technology* 158, no.1 (January 2003): 46.

<sup>153</sup> Cooper and Szeto, "The Need for Canadian Strategic Lift," ..., 3.

initiatives such as transforming NATO to become more effective in the mission categories of Peace Support Operations and Counter Terrorism / Counter Insurgency, as well as controlling the proliferation of weapons of mass destruction. Such examples of an internal emergency response could be a bio-terrorist attack launched against a major Canadian city on the coast which would certainly require an immediate long range airlift or strategic air mobility. On the other hand, a domestic natural disaster may not allow for a strategic capability due to infrastructure, in which case tactical airlift is the only option. The recent creation of the Government Operations center will coordinate the required capability through the national emergency management system. Canadians abroad who are at risk due to natural or man-made crisis are also a national responsibility. Canada has the capacity to respond with strategic air mobility but often finds it difficult to muster the tactical capability. Certainly it is impossible to provide the tactical capability while maintaining a tactical presence in Afghanistan and sustaining Routine Operations domestically.

Pursuing Canadian diplomacy on the international stage, dealing with failed and failing states, and promoting “Responsibility to Protect” action can often be achieved through Canada’s global reach. This reach is frequently realized through strategic air mobility, whether it is supporting other nations with Canada’s airlift resources, or showing the Canadian and CF flag while transporting heads of state on diplomatic missions. Again, it is often difficult to provide the necessary tactical transport for heads of state or military leaders to enter failed states where infrastructure is non-existent, and in some cases, other nation’s airlift resources were used.<sup>155</sup> In addition, Manley’s report called for more diplomacy in Afghanistan through the increased use of Civil Military Cooperation (CIMIC) operations. CIMIC in this occurrence is operating in a high-

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<sup>154</sup> Keskitalo, “International Region-Building: Development of the Arctic as an International Region,”..., 190.

<sup>155</sup> Elinor Sloan, “Extending Canada’s Military Reach,” *National Post*, 17 March 2006, A18.

threat theatre with the greatest threat being convoy operations.<sup>156</sup> Unfortunately, only tactical air mobility will suffice to overcome this threat and Canada can not provide this capability to support the CIMIC mission categories Humanitarian, Security, Peace Support, Counter Terror, and Counter Insurgency within Afghanistan.

The use of air mobility to support the national power element of information is limited. However, in joint information sharing and joint inter-agency collaboration, it involves stabilization and reconstruction efforts with NGOs. The Air Mobility group in the CF has ample experience in this regard and has habitually provided strategic capability in conjunction with NGOs supporting the mission categories, Disaster Relief, Humanitarian, and Security. In support of aid to the civil power and defence of Canada, early information or knowledge can intercept potential attack or crisis. In this case, information sharing between nations is often achieved through state visits or military long range training flights promoting interoperability. Both of these scenarios involve strategic air mobility and have recently been reinvigorated with the acquisition of the CC177. The tactical Air Mobility group does not have the resources or extra capacity to accomplish information gathering and sharing at this time.

Psychological operations are becoming predominant as part of the information element and are achieved through special operations and usually targeted at the mission categories of Counter Terror, Counter Insurgency, and Security. The Multinational Division Center South in Iraq conducted a full scale information and psychological operation against insurgents and called on every available tactical air power resource to deliver live messaging and to drop leaflets.<sup>157</sup> The Canadian Forces participated in such operations in the past but would find it difficult in

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<sup>156</sup> Captain B.A. Purcell, "CIMIC Operations in a High Threat Theatre," *The Bulletin: For Soldiers by Soldiers* 12, no.4 (January 2007): 1-2.

current failed states due to topography. The CC130 could switch priority to drop leaflets but a tactical helicopter would be required in many regions particularly for live broadcasting or messaging.

The military element, after incorporating the Canada First Defence Strategy, can be summarized by the CF's senior leadership conceptualization describing a "home game and an away game."<sup>158</sup> The home game supports Canada's defence objectives of defending Canada and North America and the away game supports expeditions overseas. While the home game is crucial for all of the mission categories, so too is the away game important to protect Canada's interests abroad and to establish certain conditions in Canada. This strategy certainly requires expeditionary forces and the Canadian Air Force has recognized this dilemma and allocated resources to strengthen the strategic capability to get forces "over there."<sup>159</sup> There remains a significant gap in the tactical capability, identified by Manley and his commission which suggested immediate acquisition of tactical medium lift helicopters. This would allow the CF to meet many of the demanding challenges faced while trying to support CIMIC functions (including Security, Humanitarian, and Peace Support) as well as Counter Terror and Counter Insurgency mission categories. Fittingly so, and the U.S. are noting similar challenges in the role of airlift with the increased importance of rapid global mobility. The military is drawing down and concentrating their forces on continental U.S. and the logistics support is favouring a "just in

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<sup>157</sup> MGen Edward Gruszka, "Iraqi Freedom: MND CS Commanding General's Facts & Findings Drawn from Troops Deployment in MNC-I AO" (lecture, Canadian Forces College, Toronto, ON, February 18, 2008), with permission.

<sup>158</sup> MGen Andrew Leslie, "A Canadian View of the Three-Block War and Beyond," in *Beyond the Three Block War*, eds. David Rudd, Deborah Bayley and Ewa K. Petruczynik, 21-26 (Toronto: Canadian Institute of Strategic Studies, 2006), 22.

<sup>159</sup> Dr. James Ferguson, "Over there, from here: Expeditionary Forces and the Canadian Air Force"... , 9-10.

time” process as a cost savings measure.<sup>160</sup> Naturally, with Canada on a lesser scale, it places additional emphasis on expeditionary deployments that require both a strategic and tactical capability to get to the game.

This strategy also implies the Government wants to fulfill the traditional protection of Canada and North America in cooperation with the U.S. The Fraser Institute examined this very idea of cooperating militaries and asked “How Can Canada Help?”<sup>161</sup> Its examination of an attack on the western coast of North America by terrorism or natural disaster suggested troops from either country could be shared depending on which country could respond in the most expeditious manner. Realistically, if the infrastructure available due to disaster could only support tactical air mobility, Canada simply could not respond very quickly. Likewise, Canada wants the military to contribute to the UN and NATO through cooperation with Allies overseas. The capability provided by Air Mobility post war witnessed outstanding support to humanitarian assistance, disaster relief, peacekeeping, peace support, and combat operations, bringing Canada international recognition.<sup>162</sup> Currently, the strategic capability is being recognized internationally but if the tactical capability is allowed to degenerate much more, Canada risks losing its international acclaim on the world stage.<sup>163</sup>

The economic element of national power also influences air mobility. In the discussion of economics as an element of national power it was noted how important this strategic line of operation can be in achieving a campaign’s end-state. Again, this was observed by the Manley Commission who wishes to expand the CIMIC mandate in Afghanistan, but adds the requirement

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<sup>160</sup> Col D.F. Todd and Maj P. Bossert, “Viewing Rapid Global Mobility as a Revolution in Military Affairs,” *Air & Space Power Journal-Chronicles Online Journal* [article on-line]; available from <http://www.airpower.maxwell.af.mil/airchronicles/cc/todd.html>; Internet; accessed 14 January 2008.

<sup>161</sup> Barry Cooper, “North America Military Relations: How Can Canada Help?” *Fraser Forum*, June 2004, 19-20.

<sup>162</sup> Martin Shadwick, “The Strategic Airlift Enigma,” *Canadian Military Journal* 4, no.2 (Summer 2003): 63.

<sup>163</sup> Shadwick, “The Strategic Airlift Enigma,”..., 63.

for medium lift helicopters in the same vein. The current TAT capability in Afghanistan is doing its utmost to support strictly military operations and would have only limited capability to fulfill the roles of CIMIC.

The economic line of operation is important to protect Canadian national interests. Two of Canada's interests associated with economics are to "promote the economic growth of the nation to support the prosperity and welfare of its people . . . [and] work with like-minded states, in and outside international forums, for the protection and enhancement of democracy and freedom."<sup>164</sup> The Canadian Air Force Air Mobility group offers a capability to accomplish these intentions and has responded favourably to DFAIT and CIDA during humanitarian crises that demanded strategic airlift capability. Canada goes one step farther and prevents economic crisis through prevention rather than waiting for a crisis to erupt and the CF frequently show the Canadian flag by transporting personnel on economic trade missions.

The relationship between Canada and the U.S. is probably the closest and most extensive in the world today. The equivalent to \$1.5 billion in goods and services and 300,000 people a day cross the shared border.<sup>165</sup> It is paramount to not only protect this border but also put into practice the government policy of cooperation with U.S. military. A NORAD operation may require Canada to deploy to the North and for this objective Canada is lacking a tactical air mobility capability. Economic interests are bound to increase in the Arctic, creating even more security concerns in this region. Canada could also practice interoperability within the Air

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<sup>164</sup> J.L. Granatstein, "The Importance of Being Less Earnest: Promoting Canada's Interests Through Tighter Ties with the U.S." C.D. Howe Benefactor's Lecture, Toronto, ON (Toronto: C.D. Howe Institute, 2003): 12.

<sup>165</sup> Peter Andreas and Thomas J. Biersteker, "The Rebordering of North America," (2003) [book review on-line]; available from <http://books.google.ca/books?id=js8qKZmotWwC&pg=PA10&lpg=PA10&dq=%241.5+billion+300000+people+a+day+cross+canada+and+us+border&source=web&ots=HHGO7LbL0B&sig=t5mCGswPApfl4tkr6ITW'sFXpaCU&hl=en>; Internet; accessed 27 March 2008.

Mobility community of both countries but the CF lacks enough TAT capability to do so effectively.

Considering the world economy, it is acknowledged that 90% of the world's goods travel by sea to a vast majority of the world's population that lives within a few hundred miles of the coastline. It is not surprising then, that failed or failing states in need of economic assistance are not located in this superior economic zone, but rather they are land-locked without an adequate transportation system and, therefore, require air mobility. Yet again, Canada has positioned itself well in this capability from a strategic air lift perspective, but if the country has inadequate infrastructure or difficult topography, tactical air mobility may be required.

### **Air Mobility Operational Defence Capabilities**

Strategic and tactical air mobility has significant relevance to the FSE trends. Table 3 provides an overview of the mission categories which employ strategic and tactical air mobility within the FSE trends as well as the specific areas of deficiency that exists with this Canadian Air Force capability.

The political trend suggests globalization will result in conflict or countries requiring Canada's assistance far from her shores and in remote locations. It also envisages increased NGO participation in tension and conflict regions of the world which will encourage governments to follow a more comprehensive and integrated approach for a resolution and end-state for the troubled state. Failed and failing states add to this complexity because they create a volatile situation that could easily spread to neighbouring countries. Air Mobility is often first to respond to such a crisis but once a state has collapsed, Canada can expect to act on the mission categories: Humanitarian, Security, Counter Terror, Counter Insurgency, (and could culminate in

civil war.) The U.S. Joint Operating Environment analysis of future trends also describes comparable characteristics of failed states with implications such as “humanitarian relief, peacekeeping/stability, large scale evacuation, and a safe haven for drug dealers, criminals, and terrorists.”<sup>166</sup> This depiction leads to a significant requirement for the air mobile capability but while strategic capability can get Canada to the game, it is a tactical capability that is required in the theatre of operation to support the required mission categories.

The political trend also proposes the U.S. will continue with a lopsided balance of power but they will continue to leverage for strategic alliances. However, as the U.S. continues to advance its technology, it widens the gap of interoperability. Once more, Canada has stepped up in strategic airlift and can operate along side any country in the world with this capability, but lags behind in the tactical capability. In the Routine Operations mission category, Canada lacks the capability to interoperate with the U.S. in tactical air mobility. Indeed, it is likely Canada will continue to contribute to international organizations such as the UN and NATO, and the U.S. will also endeavour to gain multilateral cooperation. In fact, NATO is likely to expand its role in stabilization and counter-terrorism operations which will require more tactical air mobility for entry/exit of hostile territory and airlift inside the theatre of operation.

Future trends in the military indicate there will be a considerable enhancement of Special Operations Forces (SOF) capability to combat the increasingly complex theatres of operation, with an adversary who is difficult to detect, let alone apprehend, and who is more apt to use asymmetric tactics rather than head-on fighting. The plurality of the armed forces in such states

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<sup>166</sup> USJFCOM, *Joint Operating Environment: Trends and Challenges for the Future...*, 20.

**Table 3 – Air Mobility and the FSE Trends**

<b>Security Trends</b>	<b>Strategic Air Mobility</b>	<b>Tactical Air Mobility</b>
Political	Routine Ops Disaster Relief Humanitarian Security Peace Support War	Routine Ops Disaster Relief Humanitarian Security Peace Support Counter Terror Counter Insurgency War
Military	Routine Ops Disaster Relief Humanitarian Security	Routine Ops Disaster Relief Humanitarian Security Counter Terror Counter Insurgency War
Social & Economic	Routine Ops Disaster Relief Humanitarian Peace Support	Disaster Relief Humanitarian Security Peace Support Counter Terror Counter Insurgency
Resource & Environment	Disaster Relief Humanitarian Peace Support	Disaster Relief Humanitarian Security Peace Support
Science & Technology	Routine Ops Disaster Relief Humanitarian Security Peace Support War	Routine Ops Disaster Relief Humanitarian Security Peace Support Counter Terror Counter Insurgency War
<p><b>Summary:</b> The Air Force has the capability to support all mission categories that require strategic air mobility with respect to the FSE trends. There are more mission categories associated with tactical air mobility using FSE trend analysis. However, the capability in TAT is overall in a fragile condition<sup>167</sup> and may not be able to support the mission categories derived from the FSE analysis in most cases.</p>		

<sup>167</sup> LGen S. Lucas, “Air Mobility – An Essential Capability for Canada,” ..., [on-line].

adds to the complexity and leads to a requirement for tactical resources in preparation for surprise or deception from these forces. Present operations in rogue states are regularly confronted with irregular warfare and the U.S. learned in the early stages of the Afghanistan war that they relied heavily on airlift capabilities but exposed many deficiencies, particularly in the tactical capacity. There was a requirement for additional C-17s (used in a tactical role) and their C-130 Hercules fleet, including tactical air-to-air refuelling tankers, required Night Vision Goggle (NVG) capability to operate effectively in this environment.<sup>168</sup> Canada is also expected to continue using “forces capable of special operations in pursuit of national objectives around the world.”<sup>169</sup> It is becoming imminently necessary to combat terrorist activity by moving material and personnel by tactical air. In fact, the U.S. media describes “tactical airlift [as a] key to winning the war on terrorism.”<sup>170</sup> Canada’s Air Mobility force in the Afghanistan theatre has contributed successfully to overcome this dilemma and used TAT aerial delivery to drop urgent re-supply to coalition troops cut-off from ground convoy support.<sup>171</sup> While this is a matter of Routine Operations, where it is regularly practiced and exercised, it is evident Canada does not possess enough of this capability, or likewise the tactical air-landed capability (which offers better precision) to be used regularly in operations.

The U.S. military is extremely focused on improving their SOF and subsequently, their tactical air mobile capability. The USAF developed its own doctrine on irregular warfare, devoting an entire two chapters on air force applications and capabilities and a complete section

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<sup>168</sup> Cordesman, *The Lessons of Afghanistan: War Fighting, Intelligence, and Force Transformation...*, 1-2.

<sup>169</sup> Sean M. Maloney, “Special Operations Forces in Kosovo and Afghanistan,” in *Choice of Force: Special Operations for Canada* ed. David Last and Bernard Horn, 157-172 (Montreal: McGill-Queen’s University Press, 2005), 157.

<sup>170</sup> US Fed News Service, Including US State News, “Tactical Airlift Key to Winning War on Terrorism,” (13 January 2008); <http://proquest.umi.com>; Internet; accessed 16 January 2008.

<sup>171</sup> Matthew Fisher, “Canadian Air Drops Save Lives,” [article on-line]; available from [http://www.airforce.forces.gc.ca/site/newsroom/news\\_e.asp?id+4023](http://www.airforce.forces.gc.ca/site/newsroom/news_e.asp?id+4023); Internet; accessed 11 February 2008.

on irregular warfare's dependence on air mobility.<sup>172</sup> Canada will also need to place the

category, tactical is required for Humanitarian, Security, Peace Support, Counter Terror, Counter Insurgency and, War.

Social instability in developing nations can lead to a loss of a government's authority and ultimately a failed or failing state. The problem then becomes a concern for international security as the unstable state becomes a breeding ground for organized crime, terrorism, or extremist groups. To prevent countries from falling to this level, Canada has been exceptional at providing strategic airlift in support of Disaster Relief, Humanitarian, and Peace Support mission categories. A similar trend is noted with security as a result of urbanization. Large cities in failed or failing states lack law enforcement and therefore terrorist or insurgent groups "use this ungoverned space as a theatre of operations that provides them with concealment and some shelter against attack."<sup>176</sup> To detect and deter such developments, or even react to natural disaster where the situation is compounded as a result of urbanization, TAT capability (in conjunction with SOF capability) is required to support Disaster Relief, Humanitarian, Security, Peace Support, Terrorism, and Counter-terrorism mission categories. Canada will need to look internally as a result of migration and Diaspora communities growing within the country. There will be a significant requirement to provide additional security within Canada but it is also evident that these ethnic groups will remain connected to their homelands. Their strong voice will influence foreign policy and demand assistance or protection if their homeland or ethnic group is in distress. Canada has proven the strategic capability to meet the demands. In fact, the first ever mission of the CC-177 after acceptance into service in the Air Force was a

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<sup>176</sup> Department of National Defence, *Strategic Assessment 2006-2007* (Ottawa: Directorate of Strategic Analysis, 2006), 95.

humanitarian mission to Jamaica in the wake of Hurricane Dean.<sup>177</sup> Nonetheless, the CF will need improvements in the tactical capacity.

The trend for further economic disparity will result in desperate humanitarian conditions in countries falling down the economic ladder. While Canada's main trading partner will continue to be the U.S., it will also need to expand as a trading nation and will subsequently have other interests overseas. Canada's strategic capability will play a pivotal role, providing Routine Operations (interoperability) with U.S. forces and Disaster Relief or Humanitarian support to underdeveloped countries in the world. The air mobile capability will be effective unless there is a region of the world that is only accessible by using TAT resources.

Resource inequality is also predicted to continue and, so too will conflict over resources such as food, water, oil, metals, and minerals. A U.S. military study revealed Operations Other Than War (OOTW) as one of the six major reasons for increased importance of rapid global mobility and this category of conflict relies heavily on airlift to assist in "small scale skirmishes for militaries not engaged in direct threats to their nation's security."<sup>178</sup> It emphasizes a specific requirement to support Peace Support, Disaster Relief, Humanitarian, and Security mission categories with both a strategic and tactical capability. In Canada's Arctic the resources are extremely valuable on the world stage and with global warming this "vast economic potential makes it increasingly prone to smuggling, perilous polar tourism, environmental catastrophes, and even armed conflict unless Canada and the U.S. lead efforts to bring order to the region."<sup>179</sup> Canada will need to expand its limited TAT capability to support Routine Operations, Security, and Disaster Relief mission categories in order to protect, detect, and deter in the Arctic region.

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<sup>177</sup> Department of National Defence, ADM (PA) DPAS CS07-0244, *Large and in Charge*, Air Force Public Affairs, 5 September 2007, 4.

<sup>178</sup> Todd and Bossert, "Viewing Rapid Global Mobility as a Revolution in Military Affairs," ..., 2.

Despite progress made at denuclearization, there continues to be a persistent threat of WME proliferation with North Korea still maintaining nuclear weapons and Iran continuing to pursue fissile material as well as nuclear missile delivery systems.<sup>180</sup> Canada's mineral rich Arctic is a huge attraction that needs to be protected by TAT capability.

The environmental challenges facing the world today are extremely complex, exacerbated by population growth and climate change. Unfortunately, the countries most vulnerable to the harmful dynamics between population growth and climate change also tend to be the least capable of doing anything about it.<sup>181</sup> This implies that the world remains susceptible to natural disasters such as the tsunami in the Indian Ocean and this catastrophe required a greater use of helicopter airlift capability to avoid airport congestion and to counter infrastructure deficiency problems.<sup>182</sup> Of course, the climate change impact within Canada, again, centers on the Arctic where the Air Force will require TAT helicopter and TAT air landed capability for northern operations. Canada can offer ample strategic airlift capability to countries

erosion of civil liberties. This, coupled with the explosion of technological advances, causes rapid obsolescence and Canada must be ready to increase interoperability with the U.S. who has the capability to keep pace with the technology. If the Air Mobility community loses this interoperability it will have a grave impact on other elements within the Canadian Forces which rely on this capability to be effective.

Once more, U.S. Air Mobility Command (AMC) members have identified that rapid technology advances in information leads to expeditious conflict escalation and, hence, a greater need for “air mobility forces [to] quickly bring sustained firepower anywhere on the globe.”<sup>183</sup> To do this, however, it has been recognized that TAT capability will be paramount. The USAF has examined the extensive use of air mobility over the past few years and is now trying to develop a way ahead for new equipment acquisitions with a significant concentration on TAT capability.<sup>184</sup> The Chief of AMC and U.S. TRANSCOM has declared that his team can not accomplish what is asked of them in Afghanistan because “load, distances or altitudes weren’t good even for the Army rotary wing capability to try to do. . .”<sup>185</sup> This capability is currently being researched in the U.S. who is trying to remain a step ahead of rapidly evolving technology. Canada, will have to acquire aircraft to support a continuing requirement for tactical air mobility or it will not only risk losing interoperability with the U.S. but also, will find it difficult to operate in terrain that harbours terrorists and insurgents.

### **Air Mobility Tactical Defence Capabilities**

The tactical level of conflict refers to the level at which battles or engagements are planned and executed to accomplish military objectives. Also, the focus of this activity is on the

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<sup>183</sup> Todd and Bossert, “Viewing Rapid Global Mobility as a Revolution in Military Affairs,” . . . , 1.

<sup>184</sup> Tirpak, “Crunch Time for Air Mobility,” *Airforce Magazine: Journal of the Airforce Association* . . . , 30.

ordered arrangement and manoeuvre of combat elements in relation to each other and the enemy, to achieve the combat objectives established by the operational level commander. Consequently, there should be significantly more tactical applications than strategic, utilizing the CSASS functions to determine capability requirements. Table 4 provides an overview of the mission categories which employ strategic and tactical air mobility within the CSASS functions, as well as the specific areas of deficiency that exist with this Canadian Air Force capability.

The Sense function is encapsulated at the CF level as operational information and can be used to expand the commander's area of interest and area of influence.<sup>186</sup> This may include interaction with media, industry, as well as joint and combined forces, which strategic air mobility does regularly as part of Routine Operations. The tactical intelligence piece of Sense, however, provides information on the environment and on enemy capabilities as they affect combat. In this instance, the information can be acquired through TAT capability as it supports all mission categories inside the TOO.

With respect to the Act function it involves the employment of forces and the exercise of combat power, especially through the synchronization of manoeuvre, firepower, and information, within a tactical battlespace to achieve desired effects. Indeed, from a tactical perspective, this has been a problem for the Air Force. Canada's current operations in Afghanistan require airlift aircraft with the capability to land or take-off from short, unprepared airstrips and this is where "Canada's current air mobility deficiency lies."<sup>187</sup> The CC-130s are presently performing this function but the ability to continue is severely weakened due to the age and availability of the aircraft. Of course, as the Western militaries advance their fighting tactics, employing such

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<sup>185</sup> Fulghum, "Missing the Flight," ..., 35.

<sup>186</sup> Department of National Defence, B-GJ-005-300/FP-000 *Canadian Forces Operations...*, 3-2.

<sup>187</sup> Attariwala, "C-130J: A new era in tactical airlift," ..., 22.

**Table 4 – Air Mobility and the CSASS Functions**

<b>CSASS Functions</b>	<b>Strategic Air Mobility</b>	<b>Tactical Air Mobility</b>
Command	Routine Ops Disaster Relief Humanitarian Security Peace Support War	Routine Ops Disaster Relief Humanitarian Security Peace Support Counter Terror Counter Insurgency War
Sense	Disaster Relief Humanitarian Security	Disaster Relief Humanitarian Security Counter Terror Counter Insurgency
Act	Routine Ops War	Routine Ops Disaster Relief Humanitarian Security Peace Support Counter Terror Counter Insurgency War
Shield	Routine Ops Disaster Relief Humanitarian	Routine Ops Security Peace Support Counter Terror Counter Insurgency War
Sustain	Routine Ops War	Routine Ops Security Peace Support Counter Terror Counter Insurgency War
<p><b>Summary:</b> The Air Force has the capability to support the few mission categories that require strategic air mobility with respect to CSASS functions. There are significantly more mission categories when tactical air mobility is analyzed using CSASS. However, the capability in TAT is overall in a fragile condition<sup>188</sup> and may not be able to support the mission categories derived from CSASS in most cases.</p>		

operational functions as CSASS, so too, the adversaries adapt. Complex battlespace will be derived from the terrain where an opponent will choose to do battle. A desire to avoid the

<sup>188</sup> LGen S. Lucas, “Air Mobility – An Essential Capability for Canada,” ..., [on-line].

superior firepower, organizational and technological advantages of a coalition force, “will drive enemies to seek asymmetrical means to mitigate this imbalance.”<sup>189</sup> One manner to affect this imbalance will be the selection of an operating environment that diminishes the Western technological advantage such as urban centers. Another is complex terrain such as mountains, which provide hidden sites and difficulty for coalition forces to enact manoeuvrability and mobility. Certainly, the tactical airlift capability will support the CF mission categories to some extent, but where the CC-130 is not available or not capable, due to such limitations as mountainous terrain, a tactical helicopter capability will be required to fulfill the Act function. The CF Director-General Strategic Planning reinforces the requirement for tactical air mobility, noting the CF is operating in a land-locked country at present, but must look ahead to the future. Where the CF will go next is the question, but regardless, he suggests the principles will remain the same, probably even a coastal region or littorals will come into play and “the same three-block war construct will be in play for a long time to come.”<sup>190</sup> So, wherever the battlespace may be, there will be a requirement for tactical air mobile capability.

To manoeuvre forces and troops in combat requires equipment that can perform this function with a tactical capability. The strategic airlift provides the inter-theatre capability and, in fact, supports the mission category Routine Operations by preparing the troops and equipment for a tactical level engagement. The tactical airlift provides the intra-theatre capability and directly supports the movement element of the manoeuvre tactic, employing both fixed-wing and rotary-wing.<sup>191</sup> Again, the U.S. military has debated the requirements at length and has valuable lessons learned from its operating areas. The Army and Air Force can agree that there is a need

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<sup>189</sup> LCol Bernd Horn and Regan G. Reshke, “Defying Definition: The Future Battlespace,” in *Towards the Brave New World: Canada’s Army in the 21<sup>st</sup> Century*, ed. LCol Bernd Horn and Peter Gizewski, 87-108 (Kingston: Directorate of Land Strategic Concepts, 2003), 90.

<sup>190</sup> Leslie, “A Canadian View of the Three-Block War and Beyond,” in *Beyond the Three Block War...*, 26.

for a light, transport aircraft, but that is all thus far. The U.S. Director of the Army Aviation Task Force is convinced the world environment is dictating a requirement for this type of powerful air lifter that can handle the tough operating environments.<sup>192</sup> He specifies that there are a “great number of airfields in Africa [in addition to Afghanistan and Iraq] with requirements that can be serviced by this type of aircraft whether it is a humanitarian crisis or in support of a military contingency or conflict . . . a light transport airplane fits that niche.”<sup>193</sup> Canada also operates in these environments and will need to acquire equipment that can provide the capabilities required to support all the mission categories designated by the CF.

RAND Corporation research for the USAF in supporting Counterinsurgency Operations (COIN) proposes restructuring the fleet, concentrating on assault airlift and urban warfare.<sup>194</sup> There is a particular emphasis on a tactical light capability utilizing short take-off and landings from rough surfaces with limited cargo capacity. Helicopters, at present, are the most viable option for supporting COIN in urban warfare. Considering that security, surprise, and speed are three of the six principles of special operations, it is clear the CF will need to increase the tactical airlift capability in order to enact the manoeuvre function and accomplish Counter Terrorism and Counter Insurgency missions successfully.<sup>195</sup>

The Shield function is concerned with protection of forces, resources, and facilities in order to ensure the forces survivability, conserve its fighting potential, facilitate its freedom of action, and degrade the enemy’s ability to carry out hostile actions. At the tactical level, the CF Air Mobility group has had recent experience in the Shield function for troops who were

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<sup>191</sup> Petrie, “Securing Airlift for DND,” . . . , 38.

<sup>192</sup> Fulghum, “Missing the Flight,” . . . , 36.

<sup>193</sup> *Ibid.*, 36.

<sup>194</sup> Robert C. Owen and Karl P. Mueller, *Airlift Capabilities for Future U.S. Counterinsurgency Operations* (2007) [article on-line]; available from <http://www.rand.org/pubs/monographs/MG565/>; Internet; accessed 19 March 2008.

<sup>195</sup> William H. McRaven, *Case Studies in Special Operations Warfare: Theory and Practice* (Novato: Presidio Press, 1996), 8.

dispersed in the operating area and were cut-off from protection.<sup>196</sup> This tactical aerial delivery re-supply capability provided the troops with ammunition and supplies and allowed them to regain freedom of action and survivability. Also, simply having a tactical capability for airlift in theatre offers an element of Shield. This capability permits the force to move quickly if the protection elements are threatened or move forces to degrade the enemy's ability to carry out hostile action. The latter element requires precision, especially to avoid collateral damage or fratricide. TAT capability permits SOF to enter/exit on-time, on-target and with the element of surprise that is required to accomplish their objectives. It is also important to have this as an integral capability. Some countries are relying on civilian cargo operators flying tactical aircraft to support their troops in Afghanistan, although it is in the northern region.<sup>197</sup> Nonetheless, Canada is wise to abide by the lessons learned in the GTS Katie incident and note the immense requirement for integral TAT capability well into the future.

Strategic airlift would assist at the tactical level of Shield for situations where personnel, material, and/or equipment must be removed or reconstituted to Canada. Medical evacuations would support the Routine Operations mission category whereas Non-combatant Evacuation Operations (NEO) would support the Disaster Relief or Humanitarian mission categories.

Tactical air mobility is critical in the Sustain function. Sustain includes the provision, distribution, and management of the logistics, personnel and other support required to maintain and prolong the operations of a force within an operational battlespace. The CF currently operates an effective supply chain from Canada to Afghanistan utilizing a combination of strategic and tactical air mobility to transport personnel, material, and equipment into the theatre.

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<sup>196</sup> Fisher, "Canadian Air Drops Save Lives," [article on-line]; available from [http://www.airforce.forces.gc.ca/site/newsroom/news\\_e.asp?id+4023](http://www.airforce.forces.gc.ca/site/newsroom/news_e.asp?id+4023)

<sup>197</sup> Alexey Komarov, "Russians Support Afghan Peacekeepers," *Aviation Week & Space Technology* 157, no.9 (August 2002): 49.

This process utilizes an intermediate staging base outside the conflict zone where cargo and personnel are transitioned from strategic to tactical airlift. NDHQ J4 Movements has examined overland routes on recent redeployment missions but it was determined to be equally as expensive as air; moreover, it was an incredibly longer transit and the risk to cargo was significantly higher.<sup>198</sup> To reiterate the deductions in the operational air mobility capabilities, it is becoming increasingly critical to avoid overland convoys, wherever it may be possible, which leads to a tactical air mobile requirement. Once more, it is worthy to note the remarkable value of TAT aerial delivery to sustain troops who are cut-off from their vital supply chain. The Air Mobility community continues to practice this capability and it further substantiates the requirement for the continued TAT capability in the future.

The Command function was purposely left until the last because it incorporates all other functions into a single comprehensive tactical level concept. It includes the command and control components within an operational battlespace such as processes, and systems and tools like planning, decision-making, information exchange, battlespace management, and situational awareness. To this end, tactical air mobility provides the command's vision at the tactical level of conflict. The Defence Policy Statement describes the complex and chaotic environment the CF will be required to operate in much the same as the three-block war. The analysis illustrates a scenario where land forces are involved in three-block war activities, simultaneously the Air Force is flying in supplies and humanitarian aid, standing by to directly engage or disengage a determined opponent.<sup>199</sup> This vision will be implemented in part by "establishing fully integrated units capable of a timely, focused, and effective response to foreign or domestic

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<sup>198</sup> LCol Rick Thompson, "An Operator's View: Afghanistan Sets the Stage," in *Strategic Lift Options for Canada and the Allies* ed. David Rudd, Ewa K. Petruczynik and Alexander Wooley, 49-55 (Ottawa: The Canadian Institute of Strategic Studies, 2005): 53.

<sup>199</sup> DND, *Canada's International Policy Statement: A Role of Pride and Influence in the World- Defence...*, 8.

threats to Canadian Security.”<sup>200</sup> At the tactical level this will require maritime, land, air, and special operations forces to cooperate and apply teamwork in all mission categories, which will certainly be facilitated with both strategic and tactical air mobility capability.

## **CHAPTER FIVE - CONCLUSION**

It is imperative for the Canadian Forces and government to understand the strengths, weaknesses, and potential of air mobility as a function of air power. In addition, a comprehensive understanding of the capabilities of one another's services will permit the CF or a coalition force to capitalize on this knowledge and thereby attack an adversary's strategy, compelling the enemy to do its will. The primary contribution that air power can make to resolving crises and winning conflicts is through the use of asymmetric force strategies, now and into the future, and will only come about when there is an understanding of what the air mobility capability brings to the table and where this capability can be effective.

Diplomacy, Information, Military, and Economy are aspects of national power that are leveraged in the application of armed conflict to achieve desired strategic outcomes, through the effects of military operations against an adversary's vulnerability and capability to conduct war. The strategic level determines national or multinational (alliance or coalition) security objectives and guidance, and develops and uses national resources to accomplish these objectives. Certainly Air Mobility group activities are an example of the kind of resources available to the Government at this level. It is evident that the strategic air mobile capability is most useful in this regard, but in the essential mission categories of Counter Terror and Counter Insurgency, Canada must yet acquire this tactical air mobile capability.

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<sup>200</sup> *Ibid.*, 11-12.

The operational level analyzes Future Security Environment (FSE) trends and establishes that political, military, social and economic, resources and environment, and science and technology are significantly affected by Air Mobility group capabilities. The purpose of analyzing these trends is to explore how key global issues could impact Canada over the next several years and how the Canadian Forces may be called upon to employ its capability, particularly air mobility power. An onward looking, anticipatory vision of the changing security environment predicts the CF will be required to shape its capabilities with tactical air mobility, so that it is prepared to deal with emerging challenges to Canada's security interests, particularly Counter Terror and Counter Insurgency.

The tactical level of conflict refers to the level where battles or engagements are planned and executed to accomplish military objectives, concentrating on the ordered arrangement and manoeuvre of combat elements in relation to each other and the enemy, to achieve the commander's combat objectives. Air Mobility group capabilities are absolutely required as revealed with the CSASS (Command, Sense, Act, Shield, and Sustain) evaluation of planning factors for the employment of this capability on specific tasks. This level of conflict obviously requires tactical air mobile capability to support all the mission categories of CF force planning scenarios, most of which can not be supported by strategic resources.

Most literature pertaining to air mobility operations analyzed, scrutinized, and presented only strategic airlift capability requirements and options available to governments. However, in reviewing the research in this paper, it is noted that tactical air mobility is a far more critical capability requirement for the CF and Canadian government at all levels of conflict. Strategic mobility has been a concern for Canada for some time. Only in recent years has Canada really begun to require expeditionary forces, and a cursory examination of "hot spots" on a world map

reveals they are a great distance from the Canadian border. Now that the forces are successfully getting to the overseas deployments, it is becoming obvious there is a tactical air mobile capability requirement as well.

The Government has been successful in obtaining strategic airlift from commercial sources or its Allies, predominantly the USAF. Indeed, now having integral strategic airlift capability to ensure the forces can deploy when and where required, must be a proud declaration for the Government on the world stage. This research proves that there is a requirement to focus on greater TAT capability now, which will subsequently prove its worth internationally, at all levels of conflict, and to governments of various levels of stability. The Canadian Air Force has aggressively pursued strategic airlift and now has a modern, technological capability in the CC-177. It placed the tactical airlift capability requirement to the background and therefore widened an already existing capability gap. When the Air Force began transforming its structure to deliver the required air power more effectively and efficiently, its purpose was to become more effects-based, networked enabled, and expeditionary. More focus on the tactical airlift capability gap would grant more success at achieving those goals.

Planners and those responsible for force development are continually challenged to maintain current activities, yet plan, and invest in a relevant force structure that is prepared to meet the threats and challenges expected to emerge. Foreign and defence policy objectives will dictate what tasks must be performed by the Forces. The CF is making remarkable strides in establishing Defence Capability Initiatives (DCI) which are translated into mission categories that will remain the focus and concentration of the CF. Force developers can then plan and invest for a capability that is in line with the Government's vision and it will be achieved through the successful completion of missions assigned in the DCI categories. Based on this research,

the CF should concentrate, henceforth, on the tactical airlift capability piece of air mobility. Indeed, this is the heart of the Air Force's "big six" replacement program; a multi-billion dollar program to boost the current air power capability. This program includes the replacement of the venerable CC-130 with the modern C-130J, and a completely new capability in TAT with the acquisition of a Chinook - medium to heavy lift helicopter.

Does the CF require tactical air mobile capability? Yes, and once the acquisition of the C-130J and Chinook helicopter is complete, Canada will be a world leader with its capability in air mobility. Planners and force developers can be confident they have invested in the right capability, for all levels of conflict and for all mission categories required to support the Government of Canada's defence policy objectives.

## **CHAPTER SIX - RECOMMENDATIONS**

The recent thrust for integral air mobility resources is in line with other governments and international agencies. The international community is rapidly recognizing the need for strategic airlift and nations and international military organizations across the globe are actively engaged in acquiring or strengthening their strategic airlift capabilities. Both NATO's maturing Response Force and the European Union's emerging Rapid Reaction Force demand an ever-increasing ability to deploy land forces from home bases to contingency operations beyond the traditional European boundaries. NATO has implemented measures to give its members the strategic lift capability to meet new and future threats. One initiative is the Strategic Airlift Interim Solution (SALIS) where a multi-consortium of 16 countries charter airlift and sealift, and

the other is 13 countries who have agreed to launch contract negotiations to purchase C-17s for a shared capability under NATO.<sup>201</sup>

Even the United States Air Force (USAF) faces similar challenges and its military strategists and planners are trying to “map a course in air mobility, from strategic airlifters all the way down to individual para-dropped pallets.”<sup>202</sup> The USAF is also debating with the U.S. Army concerning a light, intra-theatre airlift capability to counter the high altitude runways with rugged construction in many of their Theatres of Operation (TOO.)<sup>203</sup>

It begs the question “Are we there yet?” How will we recognize if Canada acquires the right amount of air mobile capability and, moreover, what is the right mixture of strategic versus tactical air mobile capability? Both are important questions that demand and deserve further study with empirical analysis against allied countries of a similar force structure and capability.

Likewise, there is little doubt that there will be continued pressure on an already taxed air mobility capability within the CF. To continue to contribute effectively to international operations, it is recommended that Canada studies more efficient, yet effective, methods of delivering personnel, material, and equipment around the globe. Empirical evidence could be analyzed with other countries which have made valuable use of sea lift as a means of strategic mobility and could potentially suggest a better mixture of resources and capability that would permit Canada to reach every corner of the globe in the most economical and effective manner.

Finally, empirical evidence reveals numerous studies in the air mobility component of the Move function of Canada’s Air Force. The other component that deserves further examination in relation to the current context of war fighting is force projection. This component refers to the

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<sup>201</sup> NATO Operational Capabilities Briefings, *Improving Capabilities to Meet New Threats October 2006*, (Brussels: NATO, 2006), 1,8.

<sup>202</sup> John A. Tirpak, “Crunch Time for Air Mobility,” *Airforce Magazine: Journal of the Airforce Association* 90, no. 12 (December 2007): 28.

rapid deployment of air forces to provide influence or a presence for a specific operation, and the range and reach of aerospace power can be extended to project Canada's influence in a global, expeditionary capacity. Force projection is achieved through the ability to rapidly deploy air forces over long distances which implies a requirement for strategic and tactical capability in order to arrive ready for combat.<sup>204</sup> The Air Force also states that it needs "aerospace capabilities that directly contribute to the operations of Canada's Army and Navy and . . . to move Canadian Forces personnel, equipment, and supplies to, from, and within areas of operation when and where needed."<sup>205</sup> In contemporary conflict the threat is largely asymmetrical and thus, demands force projection of SOF as well as regular army units to difficult and hostile areas. It is therefore recommended that further study examines the aspect of force projection and which integral capabilities are required to fulfill this component of the Move function.

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<sup>203</sup> David A. Fulghum, "Missing the Flight," *Aviation Week and Space Technology* 161, no. 16 (October 2004): 35.

<sup>204</sup> DND, B-GA-400-000/FP-000 *Canadian Forces Aerospace Doctrine* . . . , 42.

<sup>205</sup> Department of National Defence, A-AG-007/AG-004 *Security Above All: Transforming Canada's Air Force* (Ottawa: DND/MND, 2004), 4-2.

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